

ADAPTIVE RECOGNITION

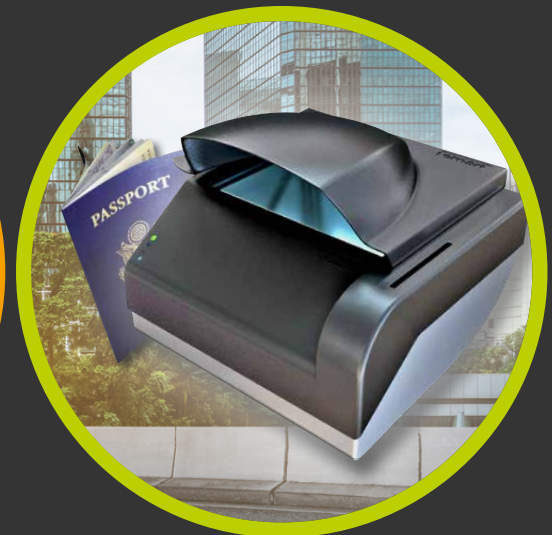
Image Recognition Products for Traffic, Security, ID Data Entry Automation and Biometric Identification



INTELLIGENT
TRANSPORTATION
SYSTEMS



RECOGNITION
SOFTWARE
& CAMERAS



IDENTITY DOCUMENT
READERS
& BIOMETRICS



market presence in
220+ countries worldwide



10,000+
satisfied partners



300+ employees



50,000+ ID scanning systems



80,000+ traffic systems

RECOGNITION SOFTWARE

SMART SURVEILLANCE



RECOGNITION SOFTWARE



CARMEN® GO
CARMEN® ANPR
CARMEN® ADR
CARMEN® ACCR
CARMEN® DOT
CARMEN® UIC

RECOGNITION CAMERAS



PARKIT CAMERA
FREEWAYCAM
SMARTCAM
SPEEDCAM
CONTAINERCAM
ENFORCECAM
MICROCAM
S1
FREEWAYCAM IR-LIGHT
FREEWAYCAM RAD-AR

INTELLIGENT TRAFFIC SYSTEMS



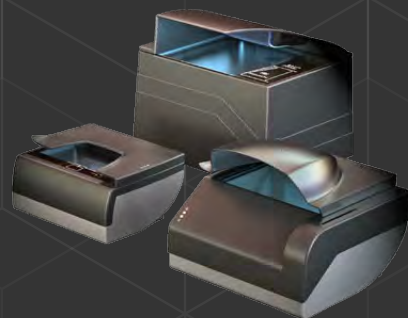
PARKIT SYSTEM®
TRAFFICSPOT
GLOBESSEY® DATA SERVER (GDS)

SMART SURVEILLANCE



VIDEO SURVEILLANCE SYSTEM
INTELLIO IVS4
INTELLIO INITIO
INTELLIO VISUS
INTELLIO SOLUTIONS

IDENTITY DOCUMENT READERS & BIOMETRICS



COMBO SCAN
COMBO SCAN KIOSK
COMBO SMART
COMBO SMART KIOSK
COMBO SMART N
PRMC
SCANNER SOFTWARE
AFS 510



ABOUT ARH

OCR RESULTS:

 ARH 001

- NUMBER PLATE: ARH 001
- VEHICLE TYPE: MERCEDES BENZ
- NATIONALITY: EU-HUNGARY
- SPEED: 158 MPH / 254 KMH
- BLACKLIST: --- NO ---
- COLOR: BLUE METAL
- OWNER: ZSOLT VANYI
- RECOGNITION TIME: 2018-01-12T15:19:21+00:00

CARMEN[®] GO

CARMEN[®]

TYPICAL APPLICATIONS

Traffic analytics? Access control? Logistics track-and-trace? The answer is ARH's CARMEN® license plate recognition – possibly the best engine that effectively reads over 28,000 plates types all over the world. But Carmen can do more: ARH's CARMEN® software family reads container codes, wagon codes, hazmat plates and more. The following examples include typical applications where ARH's plate recognition engines offer unique benefits.

TRAFFIC MONITORING

Airport and harbour logistics

LAW ENFORCEMENT

PARKING MANAGEMENT

LOGISTICS TRACK-AND-TRACE

Gas station security

Container code recognition

ACCESS CONTROL

CONGESTION CHARGING

USDOT code recognition

Railway code recognition

ADR (HAZMAT) CODE RECOGNITION

TRAFFIC ENFORCEMENT

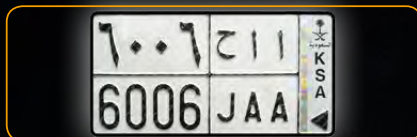
TRAFFIC ANALYTICS

campus security

TOLL COLLECTION

AVERAGE SPEED MEASUREMENT

BORDER CONTROL



- NUMBER PLATE: 6006 JAA / ٦٠٠٦ - ج ا ا
- VEHICLE TYPE: FERRARI
- NATIONALITY: KSA
- SPEED: 122 MPH / 196 KM/H
- BLACKLIST: --- NO ---
- COLOR: RED
- OWNER: AHMED ABANA
- RECOGNITION TIME: 2018-01-12T15:19:21+00:00

INTRODUCTION TO THE ANPR/LPR PROCESS

WHAT IS ANPR/LPR?

Automatic Number Plate Recognition/License Plate Recognition (ANPR/LPR) has been ARH's core technology for over 27 years – software and hardware development and manufacturing.

ANPR/LPR is a traffic surveillance method based on optical character recognition (OCR).

A specific OCR algorithm processes captured images or footage to recognize the plate characters. ANPR/LPR can be implemented in any traffic related application using either an existing CCTV/IP camera system or dedicated ANPR/LPR cameras, which ensure high recognition rates and true 24/7 operation.

The operation of any ANPR/LPR system can be divided into three main steps. It is important to highlight that CARMEN® ANPR/LPR technology provides a fully adaptable solution delivered either as an SDK (software development kit) that can be seamlessly integrated with any existing workflow – or as a standalone, ready to use application.



HOW DOES ANPR/LPR WORK IN PRACTICE?

The operation of any ANPR/LPR system can be divided into three main steps.

1. Detection & image capturing

At the front end of any ANPR/LPR system there is a camera that captures images of the plates. The camera plays an important role in the ANPR/LPR process, by making sure that the captured images are appropriate for ANPR.

This highly determines the overall performance of the system. The best results are achieved by using specialized cameras designed for ANPR/LPR. ARH offers a wide range of dedicated ANPR/LPR cameras.

2. Image preselection and plate recognition

The main software aspect of an ANPR/LPR system is reading the plate text from the preselected set of captured images.

This automated recognition has several steps, including image normalization and enhancement, as well as detecting the vehicle in the image. The final step is taken by the OCR algorithm that recognizes the individual characters.

CARMEN® ANPR is the world leader in ANPR software, and it's a result of over 26 years of continuous development. It facilitates country-independent recognition, in case of dense traffic reading of multiple plates from one image, color recognition, state or country identification, accomplishing all of this extremely fast with high accuracy.

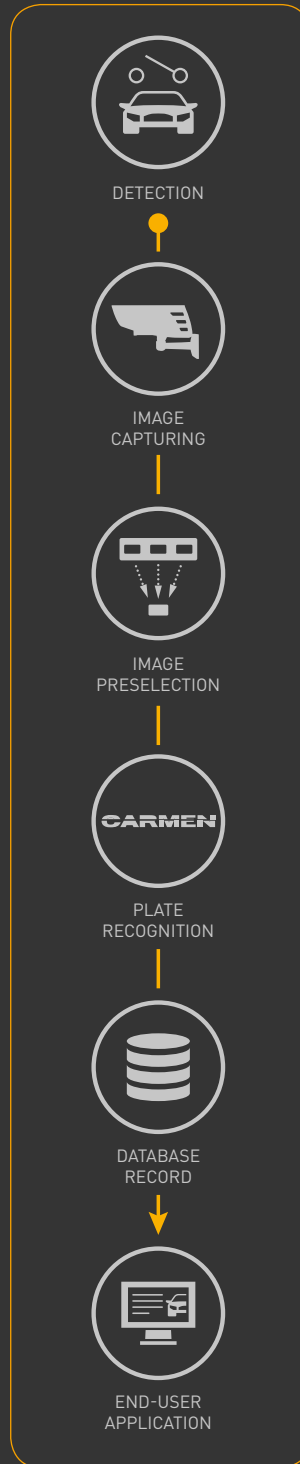
3. Data record and end-user application

Besides the characters of the vehicle plate, CARMEN® also returns plenty of additional information, such as an image with the recognized plate(s) and the confidence level assigned to each character as well as the whole plate. Once all license plate data is saved to a database, the data record serves as input to the end-user's business logic. Automated number plate recognition may be a key component of vehicle access control, traffic and toll enforcement and many other applications.

ANPR RESULTS:



- NUMBER PLATE: ARH 001
- NATIONALITY: EU-HUNGARY
- RECOGNITION TIME: 2018-01-01T15:19:20+00:00



CARMEN® ANPR FREEFLOW LICENSE PLATE RECOGNITION SOFTWARE LIBRARY & SDK

GLOBAL LICENSE PLATE RECOGNITION SOFTWARE FOR TRAFFIC SOLUTIONS

CARMEN® FREEFLOW is the unlimited version of the ANPR product line. Designed to read and process a large number of license plates in 24/7 traffic monitoring, security, highway tolling and congestion charging systems. It offers country-independent recognition as well as recognition of number plates featuring not only Latin characters but also characters from Arabic, Cyrillic, Chinese, Korean, Thai alphabets, and many more.

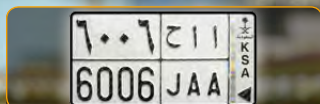
Other applications that can benefit from its fast and accurate automatic recognition capabilities include speed and journey time measurement, access control, parking management, bus lane enforcement, border control or gas station monitoring, etc. CARMEN® ANPR FreeFlow reads license plates from any image source extremely fast and with outstanding accuracy.

CARMEN®

OCR RESULTS:



- NUMBER PLATE: ARH 001
- VEHICLE TYPE: MERCEDES BENZ
- NATIONALITY: EU-HUNGARY
- SPEED: 158 MPH / 254 KMH
- BLACKLIST: --- NO ---
- COLOR: BLUE METAL
- OWNER: ZSOLT VANYI
- RECOGNITION TIME: 2017-05-12T15:19:21+03:00



- NUMBER PLATE: 6006 JAA / ٦٠٠٦ ج ا ا
- VEHICLE TYPE: FERRARI
- NATIONALITY: KSA
- SPEED: 122 MPH / 196 KMH
- BLACKLIST: --- NO ---
- COLOR: RED
- OWNER: AHMED ABANA
- RECOGNITION TIME: 2017-05-12T15:19:21+04:00

MAIN BENEFITS

- Increases security and safety of highways and access control areas
- Enhances fidelity by handling various plate sizes, syntaxes, and distorted plate images
- Allows smooth and problem-free 24/7 operation
- Saves time and energy with fast and reliable automated license plate reading
- Decreases data entry errors with improved accuracy and recognition rates
- Ensures easy installation through SDK and user-friendly API

KEY FEATURES

- Automatic recognition of license plates in free flowing traffic environments
- Fast, easy, and straightforward use
- Hardware independence: compatible with any image source (analog/digital/still images/MJPEG video streams)*
- Country, state or province, and plate type recognition
- Country-independent recognition including Latin, Arabic, Chinese, Korean, Thai, etc. characters
- Optional License plate color recognition
- Non-empty dangerous goods plate recognition included

* ARH's dedicated ANPR/LPR cameras are available for high quality image capturing and industry leading recognition rates.



TRAFFIC MONITORING



TOLLING SYSTEMS



JOURNEY TIME MEASUREMENT



ACCESS CONTROL



BUS LANE AND RED LIGHT ENFORCEMENT



TRAFFIC SECURITY MONITORING



VIDEO ANALYTICS



BORDER CONTROL



GAS STATION

CARMEN® ANPR 5K, 8K and 11K LICENSE PLATE RECOGNITION SOFTWARE LIBRARY & SDK

In applications where the vast potential of CARMEN® FreeFlow is not necessary, one of the CARMEN® ANPR 5K/8K/11K versions may be the ideal choice. In fact, CARMEN® ANPR 5K/8K/11K may be the optimal cost-effective choice for roads with low traffic density or 3rd party smart cameras with not so powerful processors. CARMEN® 5K/8K/11K can also be recommended for vehicle access control systems.

CARMEN® ANPR 5K, 8K and 11K: principle of operation

In these versions, before actually starting to process an image, CARMEN® needs a credit. New credits are generated throughout the day (24 hrs). However, the number of available daily credits are limited – hence the name 5K, 8K and 11K. In these 3 cost-effective versions of CARMEN®, operation is dependent on 2 parameters: one is a time factor indicating the time lag between generation of new credits; the other is the maximum credit buffer size – these 2 factors determine the processable number of images in a given time period. Calculating with 3 images per vehicle, there are enough credits for a peak of 180-200-220 vehicles per hour. These CARMEN® versions are ideally used for vehicle access control in corporate headquarters, as well as on roads with low traffic density – where the cameras installed or the processing hardware have limited performance.

MAIN BENEFITS

- Offers the high recognition rates of CARMEN® FreeFlow with quad-core operation
- Saving time and energy in data entry by automating plate reading
- Centralising registration eliminates the need for access cards or codes to system users
- Increasing safety and security of access control areas
- Boosting reliability by handling various plate sizes, syntaxes, and distorted plate images
- Allowing smooth and problem-free 24/7 operation
- Cost effective versions of CARMEN® FreeFlow ANPR

KEY FEATURES

- Automatic recognition of analog/digital input plate images of vehicles in stop and go or reduced speed traffic situations
- Fast, easy, and straightforward use
- Country, state or province, and plate type recognition
- Country-independent recognition including Latin, Arabic, Chinese, Korean, Thai characters, and many more
- Optional license plate color recognition



VEHICLE ACCESS CONTROL SYSTEMS



CORPORATE PARKING FACILITIES



PARKING MANAGEMENT



HOTELS OR RESIDENTIAL AREAS



AIRPORT AND HARBOUR LOGISTICS



BORDER CONTROL



GAS STATION



CARMEN® GO

LICENSE PLATE RECOGNITION CLOUD AND PLUG & PLAY ANPR

Are you looking for a simple app to transform any video stream into ANPR results? Would you like to build your own system, without the need for ANPR integration? Motivated by these challenges and capitalizing on our 27 years of experience, we have created the forward-thinking Carmen® GO, the plug and play ANPR application. It only takes a few clicks to set up Carmen® GO upon first use. All you need to do is link your camera stream(s) to Carmen® GO and you will get ANPR results directly from the stream(s). By using Carmen® GO you can focus on what matters most to you: your customers and your core business.

CARMEN® GO is a truly camera independent solution, letting you use any IP camera from any vendor.

CARMEN® GO uses the same industry leader CARMEN® ANPR engine that is at the heart of top systems around the world but it goes to the next level by self-adjusting settings to achieve optimal results. This is how we can ensure that CARMEN® GO will return the best possible result based on the given stream.

MAIN BENEFITS

- Camera independent: processes streams of any commonly available IP camera
- No need for ANPR expertise nor any ANPR integration skills
- Fully automatic operation adapts to incoming stream, self-adjusts to produce the best ANPR results
- Scalable solution that can handle up to 8 different streams adaptable to available processing power
- Automatic data storage options selectable by user: internal database, data file, FTP or data stream

KEY FEATURES

- Stream processed automatically, no need for trigger or manual selection
- Available as standalone product
- Adaptable license options, available in 3 different performance packages, each up to 8 streams (24 different options in total)
- Built in advanced vehicle detection algorithm (VehDet)

CARMEN® SERVER

TOWARDS THE CLOUD

Are you looking for a centralized, server based ANPR? Would you like to build your own, powerful backend? Your dedicated cloud or video management system? Think BIG! We have the solution: CARMEN® Server. This version enables your system to perform dozens, even hundreds, of number plate recognitions simultaneously.

- Available to serve 32/64/128/256 parallel ANPR processing tasks
- Enables you to build your own dedicated ANPR cloud server, capable of serving local, regional or nationwide systems
- Daily processed images can reach up to 200+ million*

* 256-core system, 100 ms average processing time



TRAFFIC MONITORING



TOLLING SYSTEMS



JOURNEY TIME MEASUREMENT



ACCESS CONTROL



BUS LANE AND RED LIGHT ENFORCEMENT



TRAFFIC SECURITY MONITORING



VIDEO ANALYTICS



BORDER CONTROL



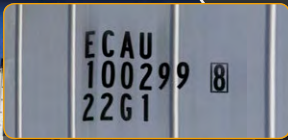
GAS STATION

CARMEN® GO



CARMEN® ACCR ISO CONTAINER CODE RECOGNITION SOFTWARE LIBRARY & SDK

The CARMEN® Automatic Container Code Recognition (CARMEN® ACCR) software has been specifically designed to extract and read the Container Codes of ISO containers – the primary identification number of intermodal (shipping) containers. The code identifies the owner and the type/category of the container, and it serves as a unique serial number. Reading the ISO 6346 (BIC code), ILU and MOCO container codes of shipping containers can automate and simplify road, railway, or harbor operations, help border control, manage inventories and run container surveillance systems.



OCR RESULT:
ECAU 100299 8 22G1

ADR/HIN (KEMLER) CODE RECOGNITION CARMEN® ADR SOFTWARE LIBRARY & SDK

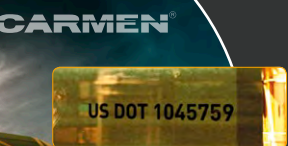
The CARMEN® Automatic Dangerous Goods Recognition (CARMEN® ADR) software has been developed to recognise the Hazard Identification Numbers (Kemler codes) of vehicles carrying hazardous materials. The automatic reading of Hazard Identification Numbers (HIN) in a traffic monitoring or safety system increases safety on roads, bridges, in tunnels – wherever hazardous materials are transported. CARMEN® ADR identifies materials in transport through HIN codes that indicate primary and secondary hazards, which gives emergency responders the ability to quickly reference critical information about potential dangers.

33
1088

OCR RESULT:
33 1088

CARMEN® DOT USDOT (DOT) NUMBER RECOGNITION SOFTWARE LIBRARY & SDK

The CARMEN® DOT software has been created to extract and read the DOT number of a CMV (Commercial Motor Vehicle). All commercial vehicles in the United States have to have a unique identification number obtained from their respective Dept. of Transportation: the USDOT (or DOT) number. CARMEN® DOT functions as a highly accurate tool for automatic identification and tracking, as well as supporting inventory control systems.



OCR RESULT:
1045759

UIC RAILWAY CODE RECOGNITION CARMEN® UIC SOFTWARE LIBRARY & SDK

The CARMEN® Railway Code Recognition software (CARMEN® UIC) automatically extracts and reads the UIC numbers from railway wagons. Much like commercial motor vehicles and ISO containers, railroad cars carrying freight or passengers also have unique and internationally standardized identification numbers. Railway companies and logistics operations can significantly benefit from implementing CARMEN® UIC which reads railroad car codes from an image or video signal with the highest accuracy possible.



OCR RESULT:
33-80-7920077-4

COMPARISON CHART

AVAILABLE VERSIONS	CARMEN® ANPR 5K / 8K / 11K	CARMEN® ANPR/ADR FREEFLOW
Available versions	QUAD	SINGLE / DUAL / QUAD
Supported operating systems	Windows, LINUX	
Supported platforms	x86_32 x86_64 ARMv7 or higher	
Suggested CPU cores	1-4	2 / 2 / 4
NNC required, available NNC types	USB (internal 4 pin or type A), PCIe card (X1), Mini PCIe	
Available tools	SDK/API, license manager, engine manager (for Windows) ADI demo, AVI Demo *	
Supported programming languages	Windows and Linux: C/C++, Java Windows only: C#, Visual Basic .NET	
Engine update availability	One year from purchase included, optional subscription available on yearly basis	
Capacity (images/day)	5760 / 8640 / 11250	unlimited**
Processing threads	4 parallel threads	1 / 2 / 4 parallel threads
Credit buffer	300 / 240 / 200	unlimited
Time for 4 new credits (sec)	60 / 40 / 30	-
INTERFACE		
Input	Image (1 still image or 1 frame from a video stream)	
Output	Through SDK functions: NUMBER PLATE RESULTS (multiple if applicable), COUNTRY/STATE, PLATE TYPE, TIP LIST, COLOR, CONFIDENCE LEVEL, POSITION, etc.	

* For more TOOLS: check our SOLUTIONS or SMARTCAM product range

** Depends on CPU speed, settings, engine type

SOFTWARE & SDK

CARMEN® ANPR/ADR SERVER	CARMEN® GO ANPR	CARMEN® ACCR/DOT/UIC
32 / 64 / 128 / 256	SINGLE / DUAL / QUAD	SINGLE / DUAL / QUAD
Windows, LINUX	Windows	Windows, LINUX
x86_32 x86_64 server cloud virtual machines	x86_32 x86_64	x86_32 x86_64 ARMv7 or higher
32-256	2 / 2 / 4	2 / 2 / 4
NNC SERVER	USB (internal 4 pin or type A), PCIe card (X1), Mini PCIe	USB (internal 4 pin or type A), PCIe card (X1), Mini PCIe
SDK/API, license manager, engine manager(for Windows) ADI demo, AVI Demo *	Carmen GO service application, web interface, license manager, SDK for the stream output	SDK/API, license manager, engine manager(for Windows) ADI demo, AVI Demo *
Windows and Linux: C/C++, Java Windows only: C#, Visual Basic .NET	-	Windows and Linux: C/C++, Java Windows only: C#, Visual Basic .NET
one year from purchase included, optional subscription available on yearly basis	one year from purchase included, optional subscription available on yearly basis	one year from purchase included, optional subscription available on yearly basis
unlimited**	unlimited**	unlimited**
scalable: 32 to 256 / RACK	1 / 2 / 4 parallel threads	1 / 2 / 4 parallel threads
unlimited	unlimited	unlimited
-	-	-
Image (1 still image or 1 frame from a video)	Live video stream, 1-8 parallel – selectable at purchase	Set of images (multiple still images or frames from videos)
Through SDK functions: NUMBER PLATE RESULTS (multiple if applicable), COUNTRY/STATE, PLATE TYPE, TIP LIST, COLOR, CONFIDENCE LEVEL, POSITION, etc.	Direct output to INTERNAL DATABASE, FTP, CSV, DATA STREAM formats. Output data: NUMBER PLATE RESULTS, Plate country, images, stream ID, time stamp	Through SDK functions: OCR RESULTS TYPE, TIP LIST, CONFIDENCE LEVEL, POSITION

Technical specifications are subject to change without prior notice. This document does not constitute an offer.

* For more TOOLS: check our SOLUTIONS or SMARTCAM product range

** Depends on CPU speed, settings, engine type



RECOGNITION CAMERAS & SENSORS

TYPICAL APPLICATIONS

Parking? Toll collection? Enforcement? ARH's new lineup of purpose-built license plate recognition cameras, as well as a new container camera, are optimized for the World's No. 1 ANPR engine, Carmen® – functioning as the strong backbone of systems used in these application areas.

TRAFFIC ENFORCEMENT

Parking revenue systems

LAW ENFORCEMENT

TRAFFIC SECURITY MONITORING

Company employee parking

Residential areas

Public parking lots

SPEED ENFORCEMENT

BARRIER/GATE CONTROL

Shopping mall parking

VEHICLE ACCESS CONTROL

ADR (HAZMAT) CODE RECOGNITION

ANPR IMAGING

BORDER CONTROL

Visitor parking

TOLL COLLECTION

AVERAGE SPEED MEASUREMENT

CONTAINER/RAILWAY CODE RECOGNITION



LITTLE KNOWN FACTS ABOUT ANPR CAMERAS

THE MEGAPIXEL MYTH

A common misunderstanding about recognition cameras: higher megapixel means better recognition accuracy. However, this is not true. A superior ANPR software like our neural network based CARMEN® needs a character to be only 16 pixels high (20 pixels in case of non-Latin characters). This means that a 1 or 3-megapixel resolution camera is more than enough to cover one lane of the road for license plate recognition. Higher resolution than that, like 5-7 megapixel cameras, are not only unnecessary for ARH's ANPR engine CARMEN®, but will actually increase processing time without any benefits.

ILLUMINATION

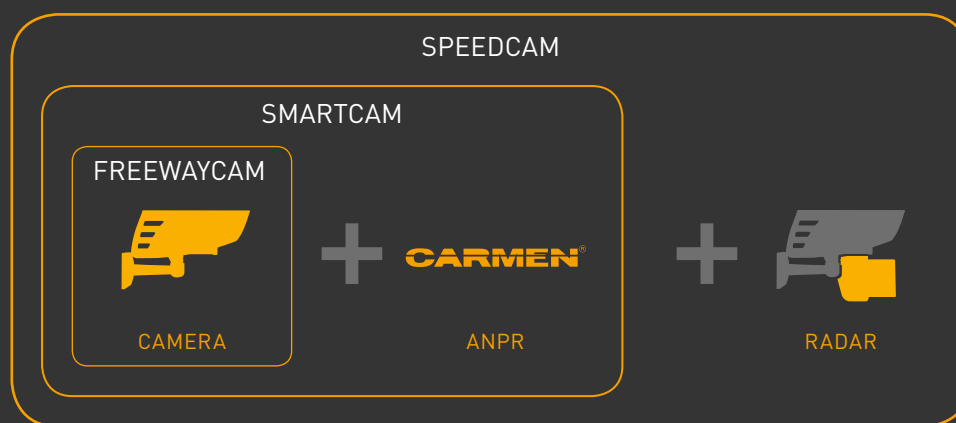
All of ARH's purpose-built ANPR cameras have integrated illumination – this is not the case for all manufacturers. ARH's range of LED illuminators include white or 2 different wavelengths of infrared light sources – preset to focus the maximum amount of light to the perfect distance for the actual camera. Integrated lights are synchronized with the camera for perfect time flashing, with extra low energy consumption while maintaining high performance and high power output. Frame Parity Flashing – an innovative solution that improves illumination for ANPR purposes of both reflective and non-reflective license plates at the same location with the same camera. If necessary, a maximum of 7 additional fully compatible external flashes can be connected to ARH recognition cameras from our own product line: the FreewayCAM IR-LIGHT series.

VEHICLE DETECTION (VEHDET)

A common problem in license plate recognition is selecting the right images. If there is no trigger mechanism, the recognition engine needs extreme processing power to keep up with the continuous flow of images or the live video stream. If there is an image-based trigger spotting a vehicle in the live view of the camera, then the ANPR engine can start processing the license plate right away. Benefits: lower hardware requirements and lower overall consumption; improved performance and faster processing. Our unique solution is called Vehicle Detection. This image-based vehicle detection does the frame preselection for the ANPR engine. It is capable of detecting the shape of a vehicle – note that it is not the license plate it detects but the vehicle itself. VehDet will trigger an event – even if there is no license plate on the detected object. The result: no lost event, even without a license plate on the vehicle.

PROCESSING POWER

The industry average is a dual-core processor – other manufacturers call them smart ANPR/LPR cameras. Our cameras, by default, have a dual-core CPU and an FPGA integrated circuit dedicated to image processing itself – plus there is an extra quad-core 1.0 (ARM) or 1.9 GHz (ATOM) CPU dedicated to ANPR processing. This processing power is truly unique on the market. Running our CARMEN® engine parallel on 4 cores, processing 4 plates simultaneously aboard the camera, produces extremely fast ANPR processing. It blows competition away.



ParkIT Camera

SECOND GENERATION

IP CAMERA FOR ACCESS CONTROL
DESIGNED FOR VEHICLE PLATE RECOGNITION

CAMERA FOR AUTOMATED ANPR-BASED ACCESS MANAGEMENT

ParkIT is a purpose made digital ANPR/LPR camera, optimized for drive-through or parking applications. As a fully featured, lightweight camera, ParkIT is comprised of a resistant, single sealed waterproof enclosure with IP65 (ingress protection) rating and the camera hardware. The camera includes synchronized infrared (IR) LED illumination unit providing clear and sharp images during day and night. Its technical features include pan, tilt, wall mounted brackets with hidden cabling, auto day & night switching and barrier control functions.

Access control (entry & exit) to restricted car park or vehicle storage areas, maximum stay car park management, pay-on-exit, pay-on-foot car park management and security control or monitoring application areas can all benefit from the progressive capabilities of the ParkIT camera. If you are looking for a complete parking system or a drive-through service, ARH has a turnkey solution, ParkIT System.

MAIN BENEFITS

- Compact, cost-efficient recognition camera with great capabilities
- Capturing clear day and night images for accurate vehicle licence plate recognition
- Built-in motion detection for triggering image capturing
- Offering a user-friendly solution
- Easy integration with auto set-up wizard and simple configuration

KEY FEATURES

- Accessibility via web browsers, with embedded web server
- Automated adaptive settings, tracking environmental changes
- Auto day & night switch, IR night illumination
- Still images and video stream outputs
- Remote control and access of camera settings
- Complex I/O capabilities: control barrier and receive trigger signal



PARKING
REVENUE
SYSTEMS



ACCESS
CONTROL



AIRPORT AND
HARBOR
LOGISTICS



TRAFFIC
SECURITY
MONITORING



BUS LANE
AND RED LIGHT
ENFORCEMENT



BORDER
CONTROL



COMMERCIAL
VEHICLE
APPLICATIONS

ONVIF

 **ARH**

FreewayCAM

SECOND GENERATION

**ALL PURPOSE ANPR/LPR CAMERA
DESIGNED FOR VEHICLE PLATE RECOGNITION AT ANY SPEED**

ANPR/LPR CAMERA DEVELOPED FOR HIGH SPEED TRAFFIC APPLICATIONS

FreewayCAM is a field-proven, widely used versatile digital IP camera designed specifically for ANPR/LPR (Automatic Number Plate Recognition) in low or high-speed traffic environments. The camera consistently captures high quality images in a variety of environments and light conditions.

The camera's unique optical module with auto-adjustable shutter time and real-time motion detection-based self-triggering function also ensure appropriate image capturing at virtually any speed – even up to 255 km/h (158 mph).

The camera can be enhanced with a variety of add-on components for specific functions or circumstances. It enables the connection of additional synchronized FreewayCAM IR-LIGHT at sites where extra brightness is necessary.

Adding the external ARH RAD-AR can deliver more precise triggering than software-based motion sensing, which is a less resource-intensive solution at high speed roads and traffic congestion.

MAIN BENEFITS

- Capturing ANPR optimized images day or night, even vehicles at high speeds
- Increased recognition accuracy rates by purpose-built hardware
- Saving time by simplifying setup and providing unlimited remote access to control settings
- Decreasing network loads with adjustable image compression
- Easy installation, plug & play, auto-setup wizard for easy configuration

KEY FEATURES

- Auto day & night switch; adaptive settings to constantly changing light conditions
- Automatic time synchronization (NTP)
- Adjustable image compression for maximum ANPR/LPR performance
- Still images (JPEG) and compressed live video streams (MJPEG)
- Optimized for CARMEN® ANPR engine

ONVIF



TOLLING
SYSTEMS



JOURNEY TIME
MEASUREMENT



CONGESTION
CHARGING



ACCESS
CONTROL



AIRPORT AND
HARBOR
LOGISTICS



TRAFFIC
SECURITY
MONITORING



BUS LANE
AND RED LIGHT
ENFORCEMENT



BORDER
CONTROL



PARKING
SYSTEMS

FreewayCAM

THIRD GENERATION

MODULAR ANPR/LPR CAMERA MAKE THE MOST OUT OF EVERY ANPR SYSTEM

UNIQUE IMAGE-BASED VEHICLE DETECTION MEANS NO LOST EVENTS

The new FreewayCAM is a fixed modular IP camera purpose-built for ANPR. It is a robust, sturdy workhorse camera which performs reliably in any weather or light conditions. It provides images ideal for ANPR even in high-speed traffic at zero visible light. The IP67 certified, vandal-proof, metal body houses a powerful computer running ARH's one-of-a-kind – purely image-based – Vehicle Detection algorithm. This feature preselects every image that contains a license plate within a few milliseconds. As a result, passing vehicles are registered as individual events including image, license plate, time, location and speed data without the need to process every single frame. What is even better, there are no lost events even when the license plate is damaged or missing.

The third generation FreewayCAM is available either as a single-lens HDx model or a dual-lens FullHD model. The second lens is called Advanced Vision. The main sensor delivers ARH's usual high-standard ANPR output. The Advanced Vision second ANPR sensor makes sure that you get a clear ANPR image even when the sun glares or casts a shadow on the plate. This powerful DUAL lens format represents the leading-edge of the plate recognition industry today and tomorrow.

MAIN BENEFITS










- Glare- and shadow-free ANPR output even under extreme light conditions
- ANPR optimized images of fast-moving vehicles up to 255 km/h (158.5 mph)
- No lost events – even when license plate is damaged or missing
- On-board Vehicle Detection (VehDet) – preselects the ANPR relevant images for you
- Design and manufacturing in one hand – 26 years of experience

KEY FEATURES

- Dual ANPR lens available with Advanced Vision
- The most challenging lighting conditions are also covered
- Saving bandwidth with the on-board video analytics
- Vehicle Detection on-board – an accurate way to initiate an event
- Secure access from anywhere through HTTPS interface

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



								
TOLLING SYSTEMS	JOURNEY TIME MEASUREMENT	CONGESTION CHARGING	ACCESS CONTROL	AIRPORT AND HARBOR LOGISTICS	TRAFFIC SECURITY MONITORING	BUS LANE AND RED LIGHT ENFORCEMENT	BORDER CONTROL	PARKING SYSTEMS

ONVIF



SmartCAM

THIRD GENERATION

ANPR/LPR CAMERA WITH UNRIVALLED PROCESSING POWER AND EVEN FASTER ON-BOARD RECOGNITION

EXTRA OVERVIEW LENS TO SEE THE BIG PICTURE

The new SmartCAM is a modular ANPR camera with a built-in smart illuminator and a powerful industrial-grade computer with 2+4 cores to effortlessly handle even the most complex license plates. The device uses the industry's finest engine, CARMEN®, which is ARH's guarantee for the best number plate recognition results available. Due to the modular design, ARH is able to offer a wide range of SmartCAMs.

At one end of the range you can find the cost-efficient, single lens HDx camera, a special 1080p 4:3 ratio sensor, combining high resolution with vertically increased field of view, which offers supreme ANPR imaging at a very competitive price. With the on-board Vehicle Detection, it keeps tracking of every vehicle even when the license plate is damaged or missing. In the middle of the range is our dual Overview camera. Its primary lens and sensor focus on the license plate, while the second Overview lens makes sure that you won't have to take your 'eyes' off of the surroundings. At the other end of the range you can find our FHD DUAL PLUS Advanced Vision camera, which is one of our most powerful smart camera yet.

MAIN BENEFITS

- Standalone traffic solution
- Our most powerful smart camera yet
 - All events are directly exported to a database
 - Cost-efficient single sensor or wide application dual sensor variations
 - Modular design and hardware add-ons to satisfy all needs
 - Trouble-free remote access via the in-built secured web-server

KEY FEATURES

- 2+4 cores of processing power
 - Recognizing reflective and non-reflective vehicle plates at the same time
- Overview or Advanced Vision second lens with its dedicated sensor
- On-board video analytics such as Vehicle Detection

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.

• NUMBER PLATE: ٦٠٠٦٢١١ / 6006 JAA
 • VEHICLE TYPE: FERRARI
 • NATIONALITY: KSA
 • BLACKLIST: --- NO ---
 • COLOR: WHITE
 • RECOGNITION TIME: 2018-02-12T15:19:21+04:00



TOLLING SYSTEMS JOURNEY TIME MEASUREMENT GAS STATION VIDEO ANALYTICS TRAFFIC MONITORING ACCESS CONTROL TRAFFIC SECURITY MONITORING BORDER CONTROL BUS LANE AND RED LIGHT ENFORCEMENT

SpeedCAM
THIRD GENERATION

INTELLIGENT ALL-IN-ONE ANPR SPEED CAMERA A PROVEN STANDALONE TRAFFIC SOLUTION

SECONDARY SENSOR AND LENS FOR ENHANCED IMAGE AND ANPR+

The new SpeedCAM is a top-of-the-range camera with integrated speed radar and on-board ANPR. Its built-in radar, also functioning as a high-precision trigger, provides certified speed measuring up to 255 km/h (158.5 mph). As a deterring effect, SpeedCAM controls traffic 24/7, which means increasing road safety without the presence of law enforcement on site.

The revolutionary DUAL ANPR sensors deliver an all-time high recognition rate with full image details, thanks to the symbiosis of the main LPR lens with the glare free/shadow free imaging of the camera's secondary Advanced Vision lens. This third generation of SpeedCAM is built with an even more powerful chipset which lets the camera to recognize even the complex license plates faster than ever.

Since all events are exported to a database, no advanced programming skills are required for integration. Therefore, the new SpeedCAM is not just a building block in the system; it is a standalone Traffic Solution on its own right.

MAIN BENEFITS

- A Traffic Solution by itself; no need for extra hardware
- All events are exported to a database
- Integrated radar for speed measurement or triggering
- Glare-free / Shadow-free images – ANPR results even under challenging light conditions
- Built-in 4G / LTE modem and GPS
- Robust metal body – built to last

KEY FEATURES

- All-time high recognition rates achieved by the cooperation of the DUAL ANPR sensors
- Multi-core imaging and ANPR
- Certified speed measuring or triggering up to 255 km/h (158.5 mph)
- Powerful on-board ANPR solution with Vehicle Detection
- Capable of reflective and non-reflective license plate recognition at the same time

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



SPEED
ENFORCEMENT



TOLLING
SYSTEMS



JOURNEY TIME
MEASUREMENT



VIDEO
ANALYTICS



TRAFFIC
MONITORING



TRAFFIC
SECURITY
MONITORING



BUS LANE
AND RED LIGHT
ENFORCEMENT

ONVIF

ARH

ContainerCAM

THIRD GENERATION

DESIGNED AND BUILT FOR ACCR
AUTOMATIC CONTAINER CODE RECOGNITION

FINALLY A TRULY DEDICATED CAMERA FOR CONTAINER CODE RECOGNITION

The new ContainerCAM is an IP camera for tracking and identifying shipping containers on ships, trains or semi-trailer trucks. Shipping containers must resist harsh conditions; thus, a camera is required which can reliably function in these circumstances as well. ContainerCAM can indeed withstand wear and tear. The camera can easily read close-range BIC and ILU container codes as well as UIC railway code even when the reporting mark (ownership code) is damaged or the printed surface is uneven. ContainerCAM is a dual-sensor / dual-lens camera. The main super-wide-angle camera module is for container code recognition. The second Overview camera module offers a detailed image of the surroundings. The dual lenses and the integrated wide-angle white illumination LEDs are optimized for close-up ACCR or railway code recognition. They make sure that the OCR software will always get the best possible input.

ContainerCAM has been designed as the premier imaging tool for ARH's CARMEN® ACCR. (See CARMEN® ACCR description in this catalog.)

MAIN BENEFITS

- Specifically developed for Carmen® ACCR
- Extra wide-angle lenses – ideal for close-range imaging
- Remote access through the secure webserver
- Up to 7 extra plug-and-play illuminators

KEY FEATURES

- Reads BIC and ILU container codes as well as UIC railway code
- Built-in white LED illumination
- Motion detection analytics to maximize efficiency
- Dual lens setup with a second Overview lens

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.

ONVIF



UIC
NUMBERS



HARBOUR
CARGO



SEMI
TRUCKS

EnforceCAM

THIRD GENERATION

INTELLIGENT TRAFFIC ENFORCEMENT CAMERA PURELY VIDEO BASED, ON-BOARD DETECTORS

TRAFFIC MONITORING CAMERA

Typically used to monitor busy intersections and heavy traffic, EnforceCAM can join forces with one or multiple dedicated ANPR cameras and various sensors – with the single purpose of increasing traffic safety. EnforceCAM is designed to function as an overview camera in traffic monitoring systems. Intelligent motion tracking technology and a range of built-in event detectors can spot the violation of specific traffic rules, such as solid line crossing, moving in a wrong direction, red light crossing and improper lane use in an intersection or at railroad crossings. In short, EnforceCAM is single gantry (single pole) traffic monitoring camera applying non-intrusive detection technology: a range of switch-on/switch-off detectors (scalable and flexible) functioning as full on-board tracking intelligence to identify traffic events. EnforceCAM is the overview camera of choice to use with a complete traffic site controller (TrafficSpot®) and a back-office system (GDS). It has extendable, enormous storing capacity via accessible SD XC memory slot, enough up to several months or even years. EnforceCAM's event-based recording enhances system efficiency: each event record contains the pre-event video, helping to provide eligible evidence for court proceedings.

MAIN BENEFITS

- Automatic Incident Detection (AID) – object tracking, detecting wrong way and congestions
- Enforcement functions: red light violation, prohibited turns, bus lane use, etc.
- IP-based remote access to control settings through web browsers
- Solid IP67 housing protecting a vandal proof, massive 24/7 camera

KEY FEATURES

- Low-power but bright LED light
- Video analytics based intelligent functions
- Customized/integrated traffic analytics available according to customer needs
- Automatic Time Synchronization (NTP)

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



TRAFFIC SECURITY MONITORING



BUS LANE AND RED LIGHT ENFORCEMENT



GAS STATION



VIDEO ANALYTICS



TRAFFIC MONITORING



LAW ENFORCEMENT

ONVIF



MicroCAM

SECOND GENERATION

DAY AND NIGHT MOBILE ANPR CAMERA FOR TRAFFIC, PARKING AND LAW ENFORCEMENT

DASHBOARD/ROOFTOP ANPR CAMERA

Automatic Number Plate Recognition technologies are on the move. Today's markets demand hardware and software solutions that can automatically read license plates while the camera itself is in motion. Up until now, with no reliable way to trigger, the processing power needed for these applications ranged from immense to non-existent.

With its revolutionary software based image preselection algorithm, compact size, discreet design and the world's most sophisticated ANPR engine, the MicroCam M202 and M402 camera family provides an all-in-one solution to the greatest challenge in ANPR yet: capturing and reading license plates while both the camera and the vehicle are in motion. Reading license plates from moving vehicles for toll collection purposes, various police applications and parking enforcement is now possible with ARH's ONVIF compliant devices.



MAIN BENEFITS

- Small form factor enables patrol car rooftop-, roadside-, barrier- and gate-mounting
- Reads license plates while operating from a moving vehicle
- Quick and easy installation with single cable connection, PoE+, power
- Preselection algorithm to detect license plates
- Ideal for toll collection, police applications, neighbourhood watch and parking enforcement

KEY FEATURES

- On the move license plate recognition
- Intelligent IP camera with image preselection for ANPR engine (M202/M402)
- Onboard ANPR software (M402)
- IR illumination and automatic brightness control optimized for ANPR/LPR
- IP 67 rated weatherproof housing
- ONVIF compliant device

ONVIF



TOLL
COLLECTION



PARKING
SYSTEMS



TRAFFIC
MONITORING



LAW
ENFORCEMENT



TRAFFIC
SECURITY



VIDEO
ANALYTICS



ON THE
MOVE

ARH S1

SECOND GENERATION

PORTABLE SPEED AND TRAFFIC ENFORCEMENT CAMERA WITH ANPR/LPR AND COMMUNICATION

REDEFINES STANDARDS IN LAW ENFORCEMENT CAMERAS

A speed camera measures speed. ARH S1 does a lot more than that – quick setup, compact design, long-range detecting and ANPR, tamper-free system architecture and fully automatic operation make it ideal as a speed and traffic enforcement device.

Each passing vehicle is an event with its own data package containing vehicle speed, license plate data, time and place stamp and recorded video/images. The camera detects speeding and also identifies traffic violations like illegal lane use. Autonomous operation is possible from a patrol car or tripod, and as a practical feature, the camera can be accessed remotely. S1's wide range of day and night vision is guaranteed by built-in IR lights and ARH's very own state-of-the-art CARMEN® automatic number plate recognition (ANPR) engine.

S1 is years ahead of its competitors. With 2 cameras, integrated LED illumination and an intuitive touchscreen in a robust stylish housing, S1 is fast, reliable and performs valid speed measurement from 600 m (1968 ft) away. S1 has an internal and an external battery and can be safely transported in its rugged outdoor carrying case. Ready for service – wherever you need it.

MAIN BENEFITS

- Improved traffic safety thanks to the deterring effect of monitoring
- Data package is evidence for traffic authorities
- Recorded data stored in a hidden partition
- Long range speed detection up to 600 meters
- Video based traffic enforcement
- Fully automatic operation
- Exceptional ANPR range with highly accurate ANPR results
- Fast and easy deployment: installed on location under 3 mins
- Anti-fraud / anti-corruption / no tamper design

KEY FEATURES

- Compact all-in-one design: camera, illuminator, GPS and laser integrated into a sturdy housing
- Laser beam measurement – impossible for drivers to detect if their speed is being monitored
- Works on a tripod or from inside patrol vehicle
- Time and location data (GPS coordinates)
- Laser, WI-FI, 4G, GPS
- Detects violations: bus lane or emergency lane use, ignoring a no-entry sign



SPEED
ENFORCEMENT



TOLL
COLLECTION



BUS LANE
AND RED LIGHT
ENFORCEMENT



TRAFFIC
MONITORING



LAW
ENFORCEMENT



TRAFFIC
SECURITY



VIDEO
ANALYTICS



FreewayCAM IR-LIGHT

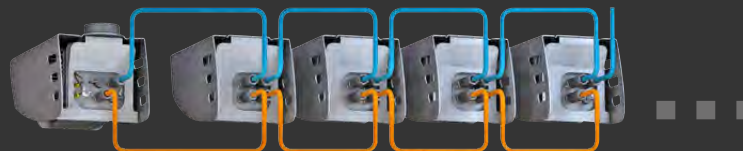
SECOND AND THIRD GENERATION

IR LIGHT SOURCE EXTENSION
TO MAXIMIZE ANPR/LPR RESULTS

ILLUMINATOR ACCESSORIES

The FreewayCAM IR-LIGHT series are extra illumination components available for ARH's 2nd and 3rd generation cameras. These extra light sources can be used to achieve brighter overview images or increase the recognition accuracy for non-reflective license plates. The white LED version is available for container code recognition or color license plates.

It is possible to connect multiple synchronized units (up to seven) to one ARH camera.



MAIN BENEFITS

- Synchronized flash with compatible ARH cameras
- Better ANPR accuracy in low visibility conditions
- Enables high quality images in low light environments
- Can be installed in a distance from the camera to avoid excessive reflections
- All-weather operation
- Low power consumption
- All settings available from the camera interface

KEY FEATURES

- 25 pcs high quality IR LED (third generation), 18 pcs high quality IR LED (second generation)
- 3 different flash intensity modes
- The LED intensity may be set separately for multiple connected units (up to seven)
- Effective range for ANPR: 3 to 20 meters (10-66 feet) on non-reflective license plates and can reach up to 100 meters (328 feet) in case of reflective license plates
 - Adjustable LED illumination time up to 950 μ s
 - IR 850nm wavelength
 - IP67 rating

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



FreewayCAM RAD-AR

THIRD GENERATION

RADAR EXTENSION HARDWARE TRIGGER ACCESSORY FOR ARH CAMERAS

IMPROVES CAMERA RECOGNITION RATES

The separately available RAD-AR extension is a great way to boost the recognition rates and reduce the workload of your ANPR system. How? Without a trigger (a signal which initiates an ANPR event) the system must run the license plate recognition process on every single frame. This requires huge processing power. To resolve this problem, when RAD-AR senses a passing vehicle, it sends a trigger signal to the camera which marks the frames where the recognition process must run. Moreover, RAD-AR is the most efficient, hardware-based trigger accessory available for third generation cameras. As a result, the system will run faster and more efficiently than a system without a trigger. The RAD-AR is delivered as a kit, containing the RAD-AR bracket so nothing else than common tools are required to mount it.

MAIN BENEFITS

- Improves camera recognition rates
- Reduces processing workload
- Non-intrusive installation
- Available for third generation ARH cameras

KEY FEATURES

- Most efficient single-unit image preselection by hardware
- Fully compatible with third generation ARH cameras
- Delivered as a kit – bracket and cable included
- Easily mounted with common tools



RADAR
TRIGGERING



DELIVERED
AS A KIT



EASY
INSTALLATION

COMPARISON CHART

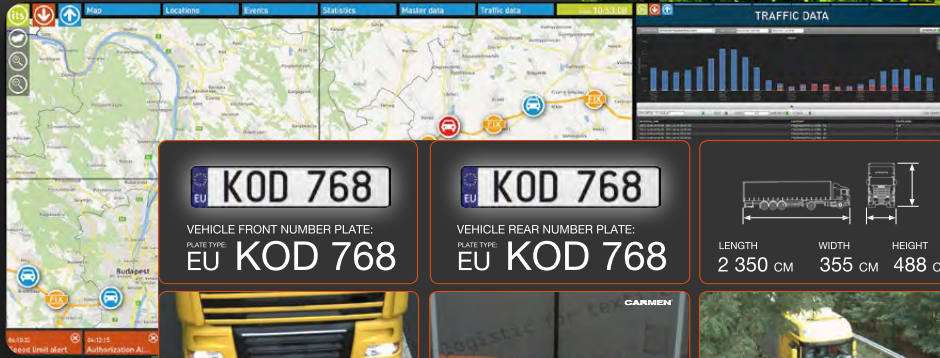
MODEL	ParkIT Camera		FreewayCAM			SmartCAM				
	WVGA	3C	WVGA	HDx	FHD DUAL	HDx	HDx Dual	HDx Dual Plus	FHD Dual Plus	
Production Code	ParkITCAM-01-1150	ParkITCAM-01-7250	FreewayCAM-02-1150	FreewayCAM-03-6350 (IR850) FreewayCAM-03-6354 (white)	FreewayCAM-03-4362 (IR850)	SmartCAM-03-6450	SmartCAM-03-6452	SmartCAM-03-6552 (IR850)	SmartCAM-03-4562	
Generation	second		second	third			third			
Function of the second sensor	-		-	Advanced Vision			-	Overview		Advanced Vision
Resolution (primary + secondary sensor)	752 × 480	2048 × 1536	752 × 480	1440 × 1080	2048 × 1536 + 1280 × 960	1440 × 1080	1440 × 1080 + 1920 × 1080		2048 × 1536 + 1280 × 960	
Typical frame rate (primary + secondary)	60	30	60	60	30 + 54	60	60 + 30		30 + 54	
Optical zoom (primary camera)	11×		11×			3.3×	11×		3.3×	
Image Buffer / Event Storage (approx.)	500 / -	150 / -	500 / -	1K / -			1K / 60K	800 / 40K		500 / 30K
Built-in LED illumination wavelength	850 nm		850 nm	850 nm / white	760 nm** / 850 nm	850 nm		760 nm** / 850 nm	850 nm	
Optimal OCR range at ambient light	4 m – 20 m (13 feet – 65 feet)		4 m – 20 m (13 feet – 65 feet)			10 m – 20 m (33 feet – 65 feet)	4 m – 20 m (13 feet – 65 feet)		10 m – 20 m (33 feet – 65 feet)	
Built-in Vehicle Detection	-		-	YES			YES			
Built-in RADAR / LASER	-		optional RADAR				optional RADAR			
Onboard ANPR	-		-				ANPR		ANPR+	
On-board computer (independent CPU cores)	400 MHz	500 MHz	400 MHz	ARM 2×766 MHz			ARM 2×766 MHz + 4×1 GHz		ARM 2×766 MHz + Intel Atom 4×1.9 GHz	
Operating temperature range	-20 °C – 70 °C (-4 °F – 158 °F)		-45 ° – 70 °C* (-49 °F – 158 °F)*			-40 °C – 70 °C* (-40 °F – 158 °F)*		-40 °C – 70 °C* (-40 °F – 158 °F)*		
IP Rating	IP65			IP67				IP67		
Full remote access	YES		YES	YES (HTTPs)				YES (HTTPs)		
4G & GPS	NO		NO				optional			
Optional accessories	Junction box for ParkIT camera		FreewayCAM RAD-AR Trigger, FreewayCAM IR-LIGHT 2, FreewayCAM junction box	IO cables, FreewayCAM RAD-AR Trigger, FreewayCAM IR-LIGHT 3, FreewayCAM junction box			IO cables, FreewayCAM RAD-AR Trigger, FreewayCAM IR-LIGHT 3, FreewayCAM junction box			

RECOGNITION CAMERAS & SENSORS

SpeedCAM	MicroCAM M202		MicroCAM M402		ARH S1
	FHD Wide	FHD	FHD Wide	FHD	
FHD Dual Plus	FHD Wide	FHD	FHD Wide	FHD	S1
SpeedCAM-03-4562	MicroCAM-02-4390 (IR850) MicroCAM-02-4398 (IR760)	MicroCAM-02-4330 (IR850) MicroCAM-02-4338 (IR760)	MicroCAM-02-4490	MicroCAM-02-4430	ARHCAMS1-01-3573
third	second				second
Advanced Vision			-		Overview
2048 × 1536 + 1280 × 960	2048 × 1536				1280 × 720 + 2048 × 1536
30 + 54	30				30 + 25
3.3x			-		30x
500 / 30K	800 / -		800 / 60K		1K / 15K
850 nm	760 nm / 850 nm		850 nm		Mixed: 760 & 850 nm
10 m – 20 m (33 feet – 65 feet)	1.0 m – 4 m (3.3 feet – 13 feet)	8 m – 15 m (26.2 feet – 49.2 feet)	1.0 m – 4 m (3.3 feet – 13 feet)	8 m – 15 m (26.2 feet – 49.2 feet)	20 m – 150 m (65 feet – 500 feet)
YES	YES				YES
RADAR			-		LASER
ANPR+	-		ANPR		ANPR+
ARM 2×766 MHz + Intel Atom 4×1.9 GHz	ARM 2×766 MHz		ARM 2×766 MHz + 4×1 GHz		ARM 2×766 MHz + 4×1.9 GHz
-40 °C – 70 °C* (-40 °F – 158 °F)*	-30 °C – 70 °C* (-22 °F – 158 °F)*				-20 °C – 50 °C (-4 °F – 122 °F)
IP67	IP67				IP54
YES (HTTPs)	YES (HTTPs)				YES (HTTPs or WiFi)
YES	NO				YES
IO cables, FreewayCAM IR-LIGHT 3, FreewayCAM junction box	Tripod mounting console, 5/10 m spare data cable				Tripod, battery charger, external battery, seat adapter, soft case



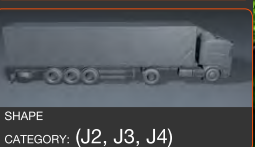
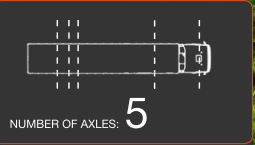
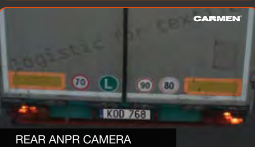
*internal temperature / ambient 40 – 55 °C (104 – 130 °F)
**available as an OEM product



KOD 768
 VEHICLE FRONT NUMBER PLATE:
 PLATE TYPE: EU
EU KOD 768



KOD 768
 VEHICLE REAR NUMBER PLATE:
 PLATE TYPE: EU
EU KOD 768



DATA OBTAINED FROM THE INSTALLED OBU OF A VEHICLE
 VEHICLE LICENCE PLATE NUMBER, VEHICLE AXLES, VEHICLE CLASS,
 VEHICLE WEIGHT LIMITS, EQUIPMENT OBU IDENTIFIER



CERTIFIED SPEED DATA
82 KM/H

TYPICAL APPLICATIONS

Where do you need traffic data? License plates, vehicle speed, dimensions, number of axles, weight, journey time and more? ARH's multi-sensor traffic data collection point is designed to monitor a wide range of vehicle attributes. The massive amount of traffic data is expertly handled by ARH's combined data server and backend software – connected to one or multiple endpoints. The following examples include typical application areas where ARH's Intelligent Traffic System solutions offer unique benefits.

WEIGH-IN-MOTION

Waiting time detection (ELI)

Bus lane enforcement

TRAFFIC ENFORCEMENT

TRAFFIC SECURITY MONITORING

Red light enforcement

Level crossing monitoring

100% Video based detection

LAW ENFORCEMENT

TOLL COLLECTION

AUTOMATED BORDER CONTROL

PARKING MANAGEMENT

Journey time monitoring

SMART CITY

SPEED ENFORCEMENT

Stolen vehicle recovery

CONGESTION CHARGING

VEHICLE CATEGORISATION

AVERAGE SPEED MEASUREMENT

SMART CITY / SAFE CITY SOLUTIONS

VIDEO ANALYTICS BASED TRAFFIC MONITORING
COMBINED WITH ANPR

OUR VISION OF SUSTAINABLE, SECURE AND AGILE METROPOLITAN MOBILITY

A key area in every smart city concept is efficient traffic management. If done right, it can have a great positive impact on urban growth, safety and environment. ARH's non-intrusive intelligent traffic monitoring devices with on-board video analytics can build up an entire smart city system. You will get real-time, accurate information on the level of service, the ability to predict traffic trends, identify potential threats or know immediately when an incident has occurred.

BENEFITS OF ARH'S INTEGRATED SMART CITY SOLUTION

1. Vehicle identification, traffic count and prediction of trends

ARH offers both fixed and portable sensors that detect and count each and every vehicle, read their license plate, identify their nationality, speed and category.

2. Proactive traffic management

ARH provides the data to make smart decisions, show real-time traffic data as a heat map, predict congestion and warn of potential traffic incidents.

3. On-street parking enforcement

Parking enforcement on busy city roads requires tremendous effort when done manually. ARH's solution collects evidence and provides an automated way of reading plates on the move.

4. Vehicle fingerprinting

Tampering with a license plate is a common offence that was once hard to detect. ARH's system successfully addresses this problem by creating a fingerprint based on the physical characteristics of a vehicle and assigning

license plate data to it. If the same LP appears on a different type of vehicle, the system will immediately spot the non-matching plate.

5. Safe roads thanks to average speed measurement

Local drivers tend to remember where to push the brake when they reach fixed speed radars. However, average speed measurement cannot be deluded as it calculates the vehicle's speed from journey time and distance between checkpoints.

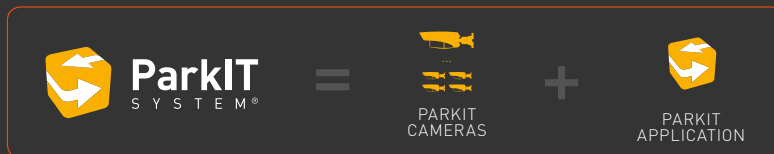
On the following pages you will find further information on ARH's intelligent traffic solutions that provide prosperity, safety and a more liveable urban environment.



PARKIT SYSTEM®

APPLICATION WITH ANPR CAMERAS AND GRAPHICAL INTERFACE FOR PARKING AND ACCESS CONTROL

AUTOMATED, EXPANDABLE VEHICLE ACCESS CONTROL SYSTEM FOR ANY SIZE OF INSTALLATION



ParkIT System® is a complete end user system specifically developed for vehicle access control that is highly flexible and customizable for use from a small residential to an industrial, commercial or government installation of any size. The system can even be installed at multiple sites at once. The system components are designed and built together to achieve simple and easy integration into any access control environment without the need for programming or other specialized skills. ParkIT System® is easy to set up, simple to operate, and it permits separate user access and administration levels for straightforward operation and data management.

Components of the system are comprised of one or more ParkIT camera(s), the industry-leading CARMEN® ANPR/LPR engine, ParkIT® Application software and customizable graphical management and user interface (GMI/GUI) for all levels. The entire secure system is accessible through thin client or other (even mobile) IP-based connections.

NEW! As of September 2018, ParkIT System® is available as a software module prepared to cooperate with 3rd party cameras.

MAIN BENEFITS

- Fast automated or predetermined vehicle access – with a powerful reporting module
- Simple ANPR/LPR-based access permission without key, card or code
- Easy installation, straightforward IP connection
- Uncomplicated graphical management and user interface

KEY FEATURES

- Unlimited expandability from 1 to even 1000 access points
- Customizable roles at 3 levels (user, admin, developer)
- License plate-based security and surveillance functions
- Black- and whitelist management, statistical functions
- Multi-language GMI / GUI
- Available with pre-installed server option as well



COMPANY
EMPLOYEE
PARKING
LOCATIONS



PUBLIC
PARKING
LOTS



HOTELS,
RESORTS,
PUBS



RESIDENTIAL
AREAS



SHOPPING CENTER
TRUCK LOADING
AND PARKING AREAS



COMMERCIAL
LOCATIONS



MILITARY
LOCATIONS

TRAFFICSPOT®

MULTI-LANE FIXED TRAFFIC MONITORING AND DATA PROCESSING

SINGLE-GANTRY LANE CONTROLLER SOLUTION

<p>VEHICLE FRONT NUMBER PLATE: EU KOD 768</p>	<p>VEHICLE REAR NUMBER PLATE: EU KOD 768</p>	<p>LENGTH: 2350 CM WIDTH: 355 CM HEIGHT: 488 CM</p>	<p>NUMBER OF AXLES: 5</p>
<p>FRONT ANPR CAMERA</p>	<p>REAR ANPR CAMERA</p>	<p>OVERVIEW CAMERA IMAGE</p>	<p>SHAPE CATEGORY: (J2, J3, J4)</p>
<p>DATA OBTAINED FROM THE INSTALLED OBU OF A VEHICLE VEHICLE LICENCE PLATE NUMBER, VEHICLE AXLES, VEHICLE CLASS, VEHICLE WEIGHT LIMITS, EQUIPMENT OBU IDENTIFIER</p>		<p>SIDE SCANNING CAMERA</p>	<p>CERTIFIED SPEED DATA 82 KM/H</p>

TrafficSpot® is a variable sensing and monitoring system installed on a single, fixed detection point (i.e.: traffic gantry or pole) for accurate surveillance and data gathering. The standard list of components includes: radar, laser, overview camera, ANPR camera and industry-leading CARMEN® ANPR/LPR software.

The additional integrated processing unit intelligently computes all measured and detected data; marks each vehicle-related event with a timestamp, location and lane identification; bundles the gathered data in an encrypted package and sends it to a pre-designated central location. In addition to toll collection and traffic monitoring, the added modules and detection systems enable TrafficSpot® to perform traffic light and lane enforcements or weigh-in-motion functions as well.

MAIN BENEFITS

- All the necessary traffic information gathered and processed in a single location
- Ideal for toll collection; speed, lane and traffic light enforcement; weigh-in-motion
- Quick ROI
- Simple maintenance
- Scalability; cost effective installation and deployment

KEY FEATURES

- 100% TÜV certified vehicle detection via multiple detectors including radar trigger, virtual loop and laser trigger
- Purpose-built to gather valuable traffic data by way of a multi-sensor traffic monitoring gantry
- Secure data retention; continued functioning offline for at least five days
- IP-based communication
- Efficient data compression and upload
- Each necessary data set bundled in a single "event" package for ARH GLOBESSEY® Data Server (GDS)
- Modular scalability for individual needs – you pay only for what you need
- Monitoring and management of each components through ARH GLOBESSEY® Data Server
- Comprehensive data gathering regarding each passing vehicle (front/rear/overview/side images, ANPR results, vehicle dimensions, category, axle numbers, weight, speed, possible traffic violations, location/date/time information)



TOLL
COLLECTION



TRAFFIC
SECURITY
MONITORING



JOURNEY TIME
MEASUREMENT



SPEED
ENFORCEMENT



CONGESTION
CHARGING



BUS LANE
AND RED LIGHT
ENFORCEMENT

GLOBESSEY® DATA SERVER (GDS)

DATA SERVER + MIDDLEWARE
FOR ITS SOLUTIONS AND MASS DATA PROCESSING

ROBUST AND FAST ITS DATA STORAGE MIDDLEWARE

Globessey® Data Server (GDS), is a combined data server and middleware, gathers information from different endpoints to make them available for various end user applications. The operators of GDS can manage the processes through a dedicated graphical interface, which is supplied along with the system, running in a web browser.

MAIN BENEFITS

- Optimized traffic speed, easier toll collection, safer roads
- Support of other traffic-related agencies (parking, law enforcement, border control, tariff, tax and statistics)
- User and developer friendly; fast ROI
- Useful outside traffic-related applications where complex image- and text-based data is mass processed (international borders, shipping ports, logistics, airports, etc.)
- Needs only a thin client at end user side

KEY FEATURES

• SUPPORTS ANY NUMBER OF ENDPOINTS

- Standard, customizable independent data packages from endpoints
- Central server connected via secure SSL
- Fast IP traffic in- and outflow with xml or binary communication

• HIGH AVAILABILITY: SUPER FAST AND SECURE DATA STORING

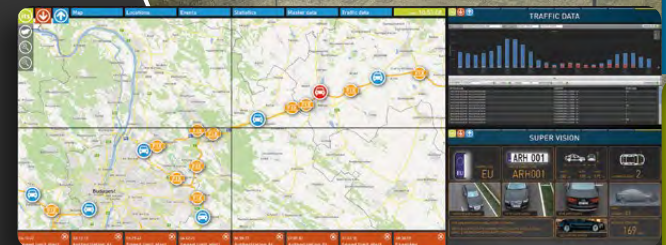
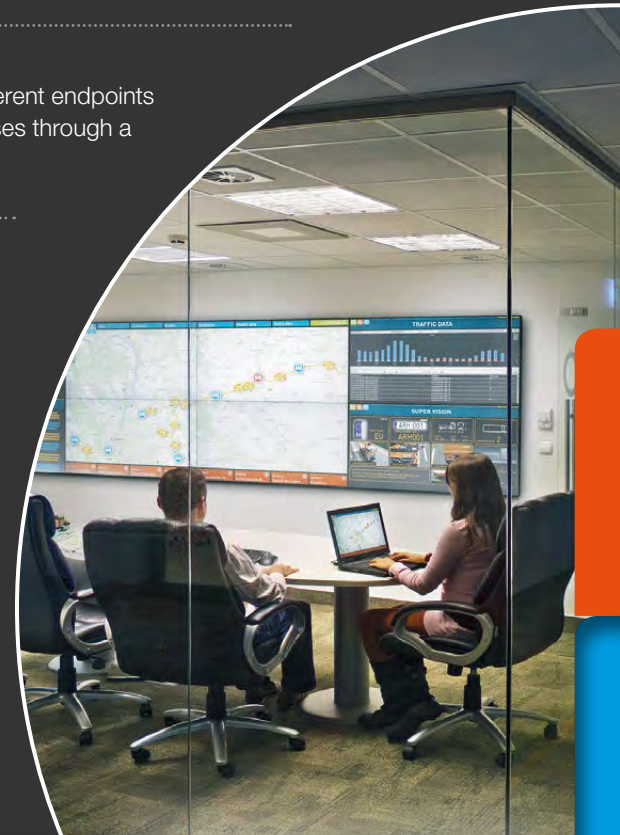
- Data redundancy through high-availability replication and clustered storage
- Highly efficient image storage
- Dynamic hardware scalability without maximum limits

• BUSINESS DOMAIN EXPERTISE

- Multiple business applications made possible by a single central backend, effectively and reliably
- Each data record is searchable, with custom-tailored access
- Wide selection of premade modules available (e.g.: stolen vehicle search)

• BUSINESS LOGIC WITH ITS OWN DATABASE

- Highly effective remote operation, reflects detailed conditions in real-time
- User-friendly display; maps and statistics
- Search; fast and flexible with preset automation, export functions
- Customizable GUI and search functions



TOLL
COLLECTION



TRAFFIC
SECURITY
MONITORING



JOURNEY TIME
MEASUREMENT



SPEED
ENFORCEMENT



CONGESTION
CHARGING



BUS LANE
AND RED LIGHT
ENFORCEMENT

COMPARISON CHART

TRAFFICSPOT® LIGHT
(WITH SMARTCAM OR SPEEDCAM)



TRAFFICSPOT®
(WITH 2D SCANNER)



TRAFFICSPOT® PRO
(WITH 3D SCANNER)



TRAFFICSPOT® LIGHT
(WITH SMARTCAM OR SPEEDCAM)

Non-intrusive	•
Mounting options	single gantry or pole
Traffic situation	free-flow
Multi-lane management	•
Detection rate	over 80 %
Front and rear ANPR	–
ANPR accuracy	up to 98.5 %
Overview imaging	optional
Side-view imaging	–
Speed measurement	optional (radar based)
Traffic enforcement (red-light-, emergency/bus lane-, forbidden zone-, white line crossing-, wrong way/turn detectors)	•
Vehicle categorization	optional (5 categories)
Vehicle categorization accuracy	approx. 80 %
Vehicle dimension measurement	–
Dimension measurement accuracy	–
Axle counting	–
WIM – Weigh-In-Motion (integrated into road pavement)	–
WIM accuracy	–
DSRC	–
Onsite processing	•
Encrypted data storing at the site	–
Encrypted data forwarding	–
3rd party support	•
GDS compatibility	–
Device health monitoring	–
24/7 operation	•

– : not included
• : included

TRAFFICSPOT®

	TRAFFICSPOT® (WITH 2D SCANNER)	TRAFFICSPOT® PRO (WITH 3D SCANNER)
Non-intrusive		•
Mounting options		single gantry
Traffic situation	free-flow	free-flow and stop-n-go
Multi-lane management		•
Detection rate	over 95%	100%, TÜV certified
Front and rear ANPR		•
ANPR accuracy		up to 98,5%
Overview imaging		•
Side-view imaging		optional
Speed measurement		optional (radar based)
Traffic enforcement (red-light-, emergency/bus lane-, forbidden zone-, white line crossing-, wrong way/turn detectors)		optional
Vehicle categorization	8+1 categories	28+1 categories
Vehicle categorization accuracy	approx. 96%	approx. 98%
Vehicle dimension measurement	width and height	width, height and length
Dimension measurement accuracy	approx. 10 cm	approx. 10 cm
Axle counting		optional (indirect or direct)
WIM – Weigh-In-Motion (integrated into road pavement)		optional
WIM accuracy		15 to 5 %
DSRC		optional
Onsite processing		•
Encrypted data storing at the site		•
Encrypted data forwarding		•
3rd party support		•
GDS compatibility		•
Device health monitoring		•
24/7 operation		•

– : not included
• : included



intellicity



intellishop



intellisport

ARH'S INTELLIO VIDEO SURVEILLANCE SYSTEM

Video analytics is a power tool in the age of Big Data. ARH's Intellio brand uses a combination of server-side intelligence and camera-side intelligence to ideally assist surveillance personnel in their daily work. The following examples include typical application areas where ARH Intellio brand smart surveillance solutions offer unique benefits.

PUBLIC TRANSPORT: PASSENGER SAFETY

Logistics park track-and-trace

INDUSTRIAL PLANT SURVEILLANCE

PROPERTY PROTECTION

VANDALISM DETERRENCE

Sports event safety

Visitor age / gender data for marketing

SHOPPING MALL SECURITY

PARKING LOT SECURITY

TRAFFIC MONITORING

Train/bus surveillance: mobile security

Internet security camera systems

THEFT PREVENTION

PUBLIC SAFETY

License plate recognition (LPR) compatibility

Home security: remote & mobile monitoring

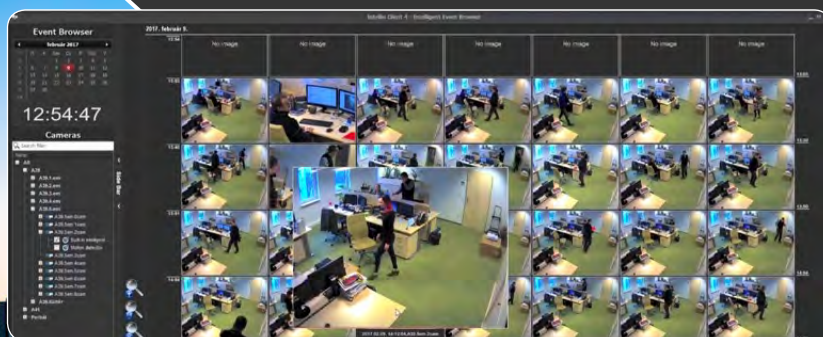
FACILITY PROTECTION

TRAFFIC MONITORING



SMARTEN UP YOUR CCTV SYSTEM - WITH INTELLIO IVS4

Intello Video System 4, the highly intelligent video management software by Intello, supports any up-to-date standard surveillance camera. IVS4 is capable of turning your existing CCTV system into a smart surveillance system. It is flexible, scalable, robust and error resistant. IVS4 has several intelligent functions for every CCTV system that makes surveillance, event query, storage, settings, operation and documentation easy and intuitive – even if the system has multiple cameras and a vast amount of recorded video footage.



FOCUS ON WHAT MATTERS

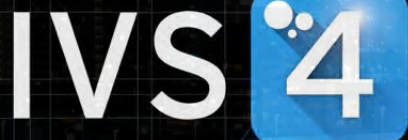
People's ability to concentrate significantly decreases after 20 minutes. Intelligent live view automatically displays the blown-up view of a detected event, thereby supporting to parry emergencies instantly.

EASY CAMERA NAVIGATION

Watching large areas is a complicated task. Navigate between cameras by simply clicking the on-screen arrows on the live or recorded video stream and patrol easily from the monitor room.

FAST AND EFFICIENT SEARCH

Spot when an object was moved in or out of a place – or any other event: Quick event browser will display it for you, even in a time interval spanning several weeks.

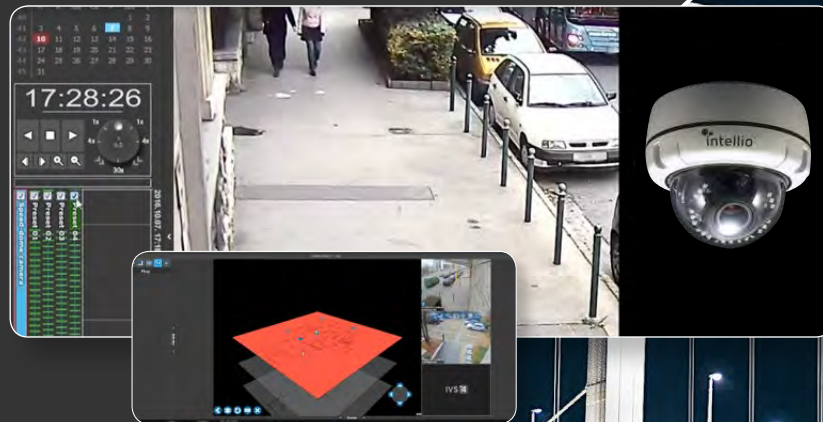



SMART PTZ CONTROL

View a recorded video footage as if it was recorded by a single fixed camera – with Intelligent PTZ preset based search.

ADVANCED GRAPHICS DISPLAY

View events on a 3D map / 3D floor plan of the building – and coordinate security guards effectively from the monitor room.



HIGH FUNCTIONALITY ON MOBILE DEVICE

Check live view remotely and immediately via a mobile application on Android and iOS platforms. Thanks to push notifications about events, security personnel can immediately react to detected events.

CONTINUOUS PERFORMANCE MONITORING

Run your system effectively with built-in performance monitor, status monitor and documentation module.



INTELLIO INITIO – COMPACT CAMERA FOR SMART SURVEILLANCE

The brand new Intellio Initio camera series is sturdy and sleek. The compact housing encompasses the latest in smart surveillance technology – in a stylish design. Initio cameras guarantee long-term and flawless operation in every surveillance area, supported by 3 years of warranty.

Initio cameras with outstanding image quality and IR illumination up to 30-50 meters are versatile and can be used indoors as well as outdoors, day and night.



MAIN BENEFITS

- Compact, cost-efficient surveillance cameras
- Solid protective housing for indoor and outdoor operation
- Intelligent video, built in line crossing and intrusion detection
- 3 years' warranty

KEY FEATURES

- New camera generation – introduced in September 2018
- Bullet and dome cameras
- 4 MP resolution
- 1/3" progressive scan CMOS
- 2.8 mm fixed or varifocal lens*
- IR illumination up to 30 or 50 meters*
- H.265+, H.265, H.264+, H.264
- Built in Micro SD/SDHC/SDXC card slot up to 128 GB
- IP67 and IK10* certification

*depending on the model

INITIO

INTELLIO VISUS – SMART SURVEILLANCE TOOL FOR VARIOUS PROJECTS

Intello's Visus camera models come equipped with built-in 8-core ARM processor and a remotely controlled lens. Visus cameras offer the competitive edge of on-board detectors and an image enhancement technology more sophisticated than those found in most security cameras, like advanced motion detection (iTracking).

Intello's smart camera generation provides reliable hardware tools for every industrial security solution from city surveillance through logistics to shopping malls and public transport. Onboard intelligence can support effectively the business processes in addition to security.

MAIN BENEFITS

- Smart surveillance cameras
- Great capabilities with onboard detectors
- Efficient operation with camera-side bandwidth management
- Wide product range for every mission

KEY FEATURES

- Box, bullet and dome cameras
- 3-12 MP resolution
- Aptina 1/3" CMOS, true WDR
- Varifocal lenses*
- IR illumination range up to 35 or 60 meters*
- H.264 SVC
- MicroSD card data storage
- IP67

*depending on the model

EXTENDED INTELLIGENCE

- Covering detection
- Rotation detection
- Intelligent motion detection
- Tripwire detection
- Entry detection
- Direction detection
- Object removal / theft detection



VISUS

INTELLIO SOLUTIONS

Intellio has always been a tech pioneer in smart surveillance. Intellio's camera-side intelligence – created as the first such technology in the World back in 2005 – combined with the video management system developed in-house, offers you unique benefits in multiple application areas.

INTELLICITY – Urban surveillance is a key element of all Smart City concepts. With complex Intellio CCTV systems you can monitor events real-time even in an entire municipality. In addition to safety functions, IntelliCity improves the day-to-day operational efficiency of public services and local governments.



KEY FEATURES

- Access the central surveillance of an entire city, displayed on a map
- Prevent vandalism and improve public safety
- Detect traffic offenses, potentially with instant revenue generation
- Benefit from the economical and sustainable system operation

REFERENCES

- City of Miskolc, Hungary (710 cameras)
- City of Székesfehérvár, Hungary (200 cameras)

INTELLISPORT – It is definitely a challenging task to maintain security efficiently at major sports and cultural events attracting massive crowds. The complex system called IntelliSport meets all the challenges, besides, it is also a profitable sales and marketing tool.

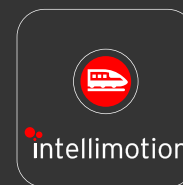


KEY FEATURES

- Get the panorama live view showing the entire stand area of the stadium or zoom in to get an ID photo quality image of a person's face.
- Take ID face photo quality images of visitors from a distance up to 100 meters.
- Boost sales and marketing by exploiting visitor demography data with our Visiscanner® video analytics software.
- Manage parking and site surveillance easily, based on automatic License Plate Recognition (LPR).

REFERENCES

- Nagyerdei Stadium, Debrecen, Hungary (20 000 spectators)
- Haladás Sports Complex, Szombathely, Hungary (9 750 spectators)
- ETO Park, Győr, Hungary (15 600 spectators)
- Javni zavod Šport Ljubljana (16 000 spectators)



INTELLISHOP – A combination of excellent image quality, intelligent video functions and smart video analytics tools offers unparalleled advantages for retailers and shopping property management firms in security as well as sales and marketing.

KEY FEATURES

- Detects objects removed from a monitored area
- Supports the efficient allocation of workforce in time and space
- Visiscanner® – intelligent video analytics tool that estimates visitor age and gender
- Supports digital content provider systems and gives instant empirical feedback on promotions

REFERENCES

- KöKI Terminal shopping mall, Budapest (70 000 m²)
- Lurdy Ház shopping mall, Budapest (70 000 m²)
- Hugo Boss stores



INTELLILOGISTIC – Intelligent camera systems make complex processes easy to track and trail. IntelliLogistic is a simple way to make sure that large volumes of valuable transported goods are delivered to their destination with no fail, delay and damage.

KEY FEATURES

- Central surveillance of multiple zones (parking facilities, buildings, staff etc.)
- Detection of damage via monitoring the entire movement of goods via barcode and QR code reading
- In case of customer complaint, footage can be used as evidence to clarify actual responsibility
- Automatic vehicle access control based on vehicle license plate – prevent unauthorized entries at the gates
- Supports digital content provider systems and gives instant empirical feedback on promotions

REFERENCES

- TESCO warehouse logistics
- PennyMarket warehouse logistics
- SPAR warehouse logistic



INTELLIMOTION – Even if the entire fleet is continuously on the move, Intellio's surveillance solution – specifically developed for use aboard public transportation vehicles – guarantees the full functionality of the latest camera systems.

KEY FEATURES

- Monitors the entire fleet of public transportation centrally with remote live view
- Records video footage aboard moving vehicles and transfers data automatically to the central server at predefined stations/stops
- Allows viewable and searchable footage; guarantees steady operation
- Stable and sharp video streams in all ambient light conditions

REFERENCES

- Stadler Rail AG
- GySEV Raaberbahn railway company
- Hungarian State Railways MÁV

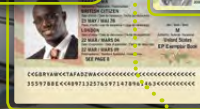


COMPARISON CHART

PRODUCTION CODE	Initio Bullet 4MP		Initio Dome 4MP		Visus Bullet 3MP
	ILB-340-BL-F	ILB-340-BL-V	ILB-340-VD-F	ILB-340-VD-V	ILD-420E-BL-IRW-POE / ILD-420E-BL-IRT-POE
Image Sensor	1/3" Progressive Scan CMOS				Aptina 3MP 1/3" , WDR
Sensitivity	Day / Night / LED: 0.01 lux / 0.018 lux / 0 lux				Day / Night / LED: 0.65 lux / 0.01 lux / 0 lux
Day-night mode / WDR	True / WDR > 100 dB				
Lenses	2.8 mm	2.8 – 12 mm, motorized focus / zoom	2.8 mm	2.8 – 12 mm, motorized focus / zoom	3–10.5 mm or 7–22 mm, motorized focus / zoom
Angle of view	Horizontal 98° Vertical 55°	Horizontal 98°–28° Vertical 51°–16°	Horizontal 98° Vertical 55°	Horizontal 98°–28° Vertical 51°–16°	IV-BL-W model: Horizontal 73–24°, Vertical 58–18°; IV-BL-T model: Horizontal 35–11°, Vertical 27–8°
Resolution / bitrate	2560 × 1440 / 32 Kbps to 16 Mbps				4:3: 2048 × 1536, 1920 × 1440, 1280 × 960; 640 × 480 / 500 Kbps – 18 Mbps 16:9: 2048 × 1152, 1920 × 1080, 1280 × 720, 640 × 360 / 500 Kbps – 18 Mbps
Frame Rate	50 Hz: 25 fps (2560 × 1440, 2304 × 1296, 1920 × 1080) 60 Hz: 30 fps (2560 × 1440, 2304 × 1296, 1920 × 1080)				H.264 4:3: 25 fps (2048 × 1536), 30 fps (1920 × 1440), 40 fps (1280 × 960), 55 fps (640 × 480) H.264 16:9: 25 fps (2048 × 1152), 40 fps (1920 × 1080), 45 fps (1280 × 720), 65 fps (640 × 360)
Video Compression	H.265 / H.264 / H.265+ / H.264+ / MJPEG				H.264 SVC – Hierarchical P encoding
Ethernet	1x RJ45 10M/100M self-adaptive Ethernet port				10BaseT / 100BaseTX, RJ-45
I/O Ports	–	Audio I/O; Alarm I/O	–	Audio I/O; Alarm I/O	–
Edge-storage	–				Storage to shared network folder via SMB protocol
Protocols	TCP/IP, ICMP, HTTP, HTTPS, FTP, DHCP, DNS, DDNS, RTP, RTSP, RTCP, PPPoE, NTP, UPnP™, SMTP, SNMP, IGMP, 802.1X, QoS, IPv6, Bonjour				NTP, TCP/IPv4, DHCP, DNS, HTTP, RTSP
Environmental Protection	IP67; TVS 2000 V Lightning Protection, Surge Protection and Voltage Transient Protection				IP67; TVS 1000 V Lightning Protection, Surge Protection and Voltage Transient Protection
Operating Conditions	-30 °C to +60 °C (-22 °F to +140 °F), humidity 95% or less (non-condensing)				IR LED on: -40 – +40 °C; IR LED off: -30 – +55 °C
Power Supply / Consumption	12 VDC ± 25% / max. 6 W PoE (802.3af, class 3) / max. 7.5 W	12 VDC ± 25% / max. 14.5 W PoE (802.3at, class 4) / max. 18 W	12 VDC ± 25%, max. 6 W PoE (802.3af, class 3) / max. 7.5 W	12 VDC ± 25% / max. 10 W, PoE (802.3af, class 3) / max. 12 W	PoE+ 802.3at / max. 20 W
Weight	420 g	1740 g	610 g	1330 g	1380 g
Compatibility	ONVIF (PROFILE S, PROFILE G), ISAPI				Open API, Onvif Profile S
IR LED / illumination distance / angle	yes / up to 30 m	yes / up to 50 m	yes / up to 30 m	yes / up to 30 m	3 pcs IR LED / 20 m 60 m / 50° 20°
Intelligent video	Line crossing detection, intrusion detection, face detection				Motion detector for live view and shooting, extended intelligence with onboard detectors

INTELLIO CAMERAS & SENSORS

Visus Dome 3MP LD-420E-VD-IRW	Visus Box 3MP ILD-420E	Visus Box 5MP ILD-510E	VISUS Box 12MP ILD-810E set
Aptina 3 MP 1/3" , WDR		Aptina 5 MP 1/2.5" CMOS	
Aptina 14 MP 1/2.3" CMOS			
Day / Night / LED: 0.65 lux / 0.01 lux / 0 lux			
True / WDR > 100 dB			
3 – 10.5mm, motorized focus/zoom		1/3" format, C/CS mount, DC iris, megapixel resolution	
Horizontal: 73 – 24°, Vertical: 58 – 18°	Evetar M125VD922IRCS lens: H: 28–11°, V: 21–8° Evetar M125VD3410IRCS lens: H: 67–25°, V: 52–19° Fujinon YV2.8x2.8SR4A–SA2 lens: H: 77–31°, V: 62–23° Evetar M123VD4510IR lens: H: 53–25°, V: 41–19° Fujinon DV4x12.5SR4A–SA1L lens: H: 20–5°, V: 15–4°	Evetar M125VD922IRCS lens: H: 35–14°, V: 26–11° Evetar M125VD3410IRCS lens: H: 80–31°, V: 64–24° Fujinon YV2.8x2.8SR4A–SA2 lens: H: 91–32°, V: 74–30° Evetar M123VD4510IR lens: H: 64–31°, V: 50–24° Fujinon DV4x12.5SR4A–SA1L lens: H: 25–6°, V: 19–5°	Fujinon DV4x12.5SR4A–SA1L lens: Horizontal: 25–7°, Vertical: 19–5°
4:3: 2048 × 1536, 1920 × 1440, 1280 × 960; 640 × 480 / 500 Kbps – 18 Mbps 16:9: 2048 × 1152, 1920 × 1080, 1280 × 720, 640 × 360 / 500 Kbps – 18 Mbps	4:3: 2560 × 1920, 1920 × 1440, 1280 × 960; 640 × 480 / 500 Kbps – 18 Mbps 16:9: 2560 × 1440, 1920 × 1080, 1280 × 720, 640 × 360 / 500 Kbps – 18 Mbps	4:3: 4096 × 3072, 3840 × 2880, 3200 × 2400, 3072 × 2304, 2560 × 1920, 1920 × 1440, 1280 × 960, 640 × 480 / 500 Kbps – 32 Mbps 16:9: 4096 × 2304, 3840 × 2160, 3200 × 1800, 3072 × 1728, 2560 × 1440, 1920 × 1080, 1280 × 720, 640 × 360 / 500 Kbps – 32 Mbps	4:3: 4096 × 3072, 3840 × 2880, 3200 × 2400, 3072 × 2304, 2560 × 1920, 1920 × 1440, 1280 × 960, 640 × 480 / 500 Kbps – 32 Mbps 16:9: 4096 × 2304, 3840 × 2160, 3200 × 1800, 3072 × 1728, 2560 × 1440, 1920 × 1080, 1280 × 720, 640 × 360 / 500 Kbps – 32 Mbps
H.264 4:3: 25 fps (2048 × 1536), 30 fps (1920 × 1440), 40 fps (1280 × 960), 55 fps (640 × 480) H.264 16:9: 25 fps (2048 × 1152), 40 fps (1920 × 1080), 45 fps (1280 × 720), 65 fps (640 × 360)	H.264 4:3: 14 fps (2560 × 1920), 21 fps (2048 × 1536), 23 fps (1920 × 1440), 40 fps (1280 × 960), 36 fps (640 × 480) H.264 16:9: 16 fps (2560 × 1440), 27 fps (2048 × 1152), 30 fps (1920 × 1080), 45 fps (1280 × 720), 44 fps (640 × 360)	H.264 4:3: 8 fps (4096 × 3072), 14 fps (2560 × 1920), 20 fps (2048 × 1536), 22 fps (1920 × 1440), 40 fps (1280 × 960), 50 fps (640 × 480) H.264 16:9: 10 fps (4096 × 2304), 16 fps (2560 × 1440), 25 fps (2048 × 1152), 30 fps (1920 × 1080), 45 fps (1280 × 720), 60 fps (640 × 360)	H.264 4:3: 8 fps (4096 × 3072), 14 fps (2560 × 1920), 20 fps (2048 × 1536), 22 fps (1920 × 1440), 40 fps (1280 × 960), 50 fps (640 × 480) H.264 16:9: 10 fps (4096 × 2304), 16 fps (2560 × 1440), 25 fps (2048 × 1152), 30 fps (1920 × 1080), 45 fps (1280 × 720), 60 fps (640 × 360)
H.264 SVC – Hierarchical P encoding			
10BaseT/100BaseTX, RJ–45			
6-pin I/O Connector: 1 Output (2 pins), 1 Input (2 pins), GND, AUX Voltage			
Yes			
NTP, TCP/IPv4, DHCP, DNS, HTTP, RTSP			
IP67; TVS 1000 V Lightning Protection, Surge Protection and Voltage Transient Protection	–		
–30 °C – +50 °C	Normal mode: 0 °C – 45 °C, ECO mode: 0 °C – 50 °C		
POE: 802.3af, Class0 DC: 24–50V / Max. 13W	Screw Fixable Terminal Blocks. Accessory: Power connector (DC jack 5.5 mm / 2.1 mm) / 12 VDC (+2V, -3V), 625 mA / PoE Support (IEEE 802.3af – PoE Class 3) / Max. 7.5 W		
900g	385 g (without lens)		
Open API, Onvif Profile S			
35 pcs of IR LEDs / max. 30 m / 50°	–		
Motion detector for live view and shooting, extended intelligence with onboard detectors			



IDENTITY DOCUMENT READERS & BIOMETRICS

TYPICAL APPLICATIONS

Age verification? Automated personal data entry? ID authentication? ARH's industry leading identity document scanners help to fulfill your business needs with easy-to-operate, accurate and adaptable solutions. ARH provides a broad range of ID scanners in multiple configurations, as well as software that can be easily integrated into your existing workflow. The following examples include typical application areas where ARH solutions offer unique benefits.

24/7 BORDER CONTROL & IMMIGRATION

retail & convenience stores

LIQUOR / TOBACCO STORE AGE VERIFICATION

NIGHTCLUBS & BARS

HOTEL GUEST REGISTRATION

money exchange offices

scrap yards, public warehouses

CASINOS & GAMING

POLICE & LAW ENFORCEMENT

ID ISSUANCE QUALITY CHECK

DUTY-FREE SHOPS

sport events

ATMs and vending machines

ACCESS CONTROL SYSTEMS

BANKING

post offices

KNOW-YOUR-CUSTOMER APPLICATIONS

E-GATES, SELF-SERVICE CHECK-IN



INTRODUCTION TO ID DOCUMENT SCANNING

UV

INFRARED

VISIBLE WHITE

RFID



As identity documents have undergone remarkable changes over the past decade, ARH's document scanning solutions have evolved and continue to represent the latest technology. The devices perform complex ID data capture and authentication, yet the simple usage and the high level of automation always ensure fast and easy operation with minimal training required.

ARH IDENTITY DOCUMENT SCANNERS

Each ARH document reader combines well-designed scanner hardware with versatile software that includes a wide range of functions for image processing, OCR, barcode reading and authentication.

A TYPICAL SCANNING PROCESS TAKES THREE STEPS:

1. IMAGE SCANNING:

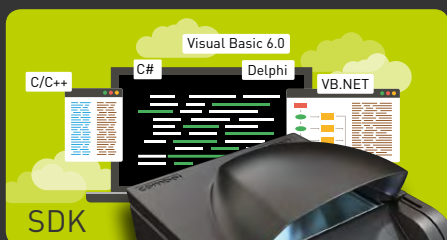
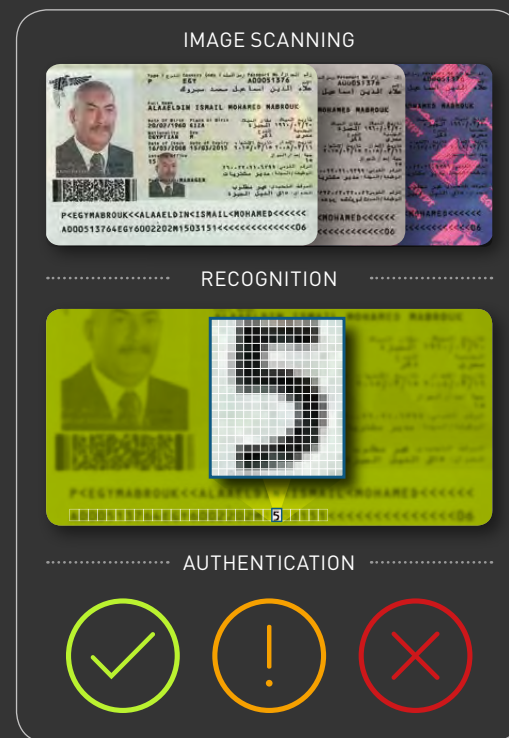
The scanner extracts optical data by capturing various images under different illuminations, and goes on to image processing (such as reflection removal).

2. PRINTED DATA READING AND CHIP READING:

ARH's world-leading OCR software recognizes all text-based information in addition to data extracted from 1D/2D barcodes and contact or contactless chips.

3. AUTHENTICATION:

The scanner performs multiple security checks on the captured images and extracted data for high-level document validation. Performing all 3 steps takes only a few seconds and requires no user intervention.



SOFTWARE INTEGRATION

Each of the ARH document scanning solutions present a universal tool suitable for any application. To ensure that ARH scanners fit any custom

workflow, all scanners are delivered with a versatile SDK that contains a comprehensive API for seamless integration. Since all ARH scanners use the same unified SDK, once the integration is completed, any ARH device is compatible with the end-user application.

OCR + AUTHENTICATION

THE FOLLOWING DATA FIELDS CAN BE RECOGNIZED AND EXTRACTED:



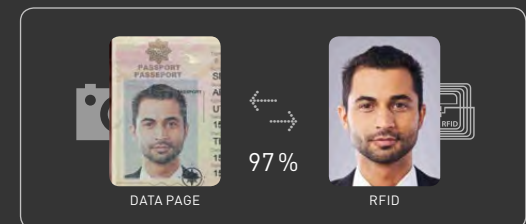
AUTHENTICATION

OVERVIEW

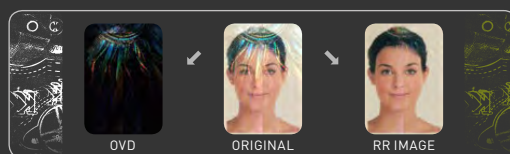
Captured images and extracted data are validated through various security checks: the checked data sets include MRZ checksums, expiration date, UV dullness, presence of B900 ink, data integrity between MRZ and RFID, biometric integrity and optional special features like advanced pattern matching or JURA IPI decoding. Some of the unique security functions are described below.

BIOMETRIC INTEGRITY CHECK: FACE COMPARE

Automated cross checking of the photo from the data page and the photo stored in the RFID. This feature effectively grants protection against altered photos on the data page.



SOPHISTICATED IMAGE PROCESSING

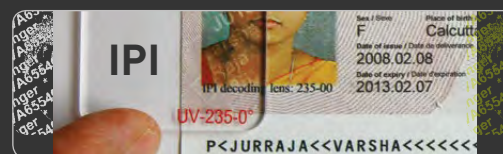


REFLECTION REMOVAL

This technology ensures that captured images are free of reflective security signs like holograms and other OVDs.

OVD VISUALIZATION

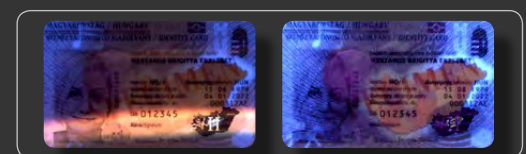
Optical elements taken off by Reflection Removal are presented on a separate image.



IPI* DECODING

IPI (Invisible Personal Information) encodes personal data into the photo of the data page, linking the photo of the owner and the ID together. The IPI is invisible to the naked eye; only authorized people are able to verify it manually with a special decoding lens or automatically by using ARH scanners.

*JURA JSP patented feature



ADAPTIVE LIGHT CONTROL

The system is well prepared for operating in variety of light conditions eliminating any kind of ambient light in the scanning process.

COMBO SCAN

ID AND PASSPORT SCANNER WITH OCR SOFTWARE LIBRARY & SDK

ULTRA COMPACT SCANNER FOR FAST DATA ENTRY

Combo Scan is an extremely compact, fast and fully automated, ID and passport scanner designed for data entry applications. Its accuracy and efficiency combined with ease of use ensure peace of mind for any business where ID or passport scanning is required. Hotel check-in, casinos, car rental or retail locations and liquor stores are just a few of the possibilities for utilization. The scanning process automatically starts when the document is placed in the reader. Several, high resolution images are captured, processed, and even the glossy reflections caused by laminated documents are removed for the best OCR results. Within only a few seconds, not only OCR, but (optional) RFID chip and bar code data are also available. This saves a lot of time – approximately 2-3 minutes per customer – and greatly improves the accuracy of the data compared to manual input. Maintenance-free operation is ensured by the no moving parts design. The scanner operates on a single USB; no external power supply is required – thus offering a small footprint usage in any front office environment.

MAIN BENEFITS

- 2-in-1 solution for scanning and OCR
- Automated data entry in any front office application
 - Quick and accurate OCR and barcode reading
 - Reading both ICAO MRZ and VIZ fields from ID cards (such as driving licenses)
 - Worldwide document support

KEY FEATURES

- MRZ reading and full-page ID-1 scanning in one device
- Ultra compact size
- High resolution 500 PPI imaging with visible white & IR illumination
- Proprietary glare-free imaging function and adaptive light control for efficient OCR and barcode reading
- Single USB connection, powered by a single USB connection
- LED-indicated operation feedback for better user experience

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



VISITOR
MANAGEMENT



HOTEL
CHECK-IN



CASINO
GAMING



CAR
RENTAL



RETAIL
SHOPS



MOBILE
OPERATORS

COMBO SCAN KIOSK

ID AND PASSPORT SCANNER FOR KIOSKS WITH OCR SOFTWARE LIBRARY & SDK

ULTRA COMPACT SCANNER FOR KIOSK INTEGRATION

Combo Scan Kiosk is a fast and fully automated ID and passport scanner designed for data entry applications. The scanner's low profile, simple rectangular form, and mounting holes make it ideal for integration with self-service kiosks, vending machines and other service desks. Accuracy and efficiency, combined with ease of use, greatly improves customer handling in various applications where reading and checking identity documents are required, for example age verification in vending machines, airport e-gates and access control gates. The scanner operates with USB and no external power supply is required. Thanks to Adaptive Light Control, this device can operate even in environments with exposure to a direct light source or excessive glare.

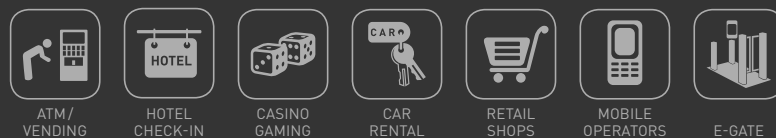
MAIN BENEFITS

- 2-in-1 solution for scanning and OCR
- Ultra compact size and seamless integration
- Self-service operation
- Reading barcodes and performing OCR in seconds
- Worldwide document support

KEY FEATURES

- MRZ reading and ID-1 scanning in one device
- Specifically designed for building into kiosks, desks, vending machines, etc.
- High resolution 500 PPI imaging with visible white & IR illumination
- Proprietary glare-free imaging function for efficient OCR and barcode reading
- Adaptive Light Control feature to eliminate ambient light interference

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



COMBO SMART

FULL-PAGE E-PASSPORT SCANNER WITH OCR SOFTWARE LIBRARY & SDK

UNIVERSAL SCANNER FOR ANY BUSINESS

Combo Smart scanners are a family of compact, full-page, multi-purpose passport and ID readers ideal for border control, customer verification in a bank, guest registration in a hotel, access control and law enforcement applications. Data extraction from driver's licenses or ID cards? Age verification? Know-your-customer (KYC) policy? RFID chip reading? Highly sophisticated document authentication? Combo Smart can do it all – available in multiple configurations, it is a great choice for its value. OEM versions are also available.

MAIN BENEFITS

- Various models for any business needs
- Reading and verifying both ICAO and non-ICAO compliant identity documents with worldwide coverage
- Processing complete passports checking both printed and digital data (ICAO MRZ, RFID, variety of security features)
- Achieving single step OCR and RFID reading for higher security and speed

KEY FEATURES

- Full-page scanning of passports, e-passports, visas, ID cards and driver licenses, boarding passes, etc.
- Compact, desktop format, full-page document scanning, dual antenna RFID system
- High resolution 500 PPI imaging with brilliant image quality
- Visible white, IR, UV illumination, and OVD visualization
- Proprietary glare-free imaging for efficient OCR and barcode reading

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



ACCESS
CONTROL



BORDER
CONTROL



QUALITY
ASSURANCE



LAW
ENFORCEMENT



BANKING



HOTEL
CHECK-IN



MOBILE
OPERATORS

COMBO SMART KIOSK

FULL-PAGE E-PASSPORT SCANNER FOR KIOSKS WITH OCR SOFTWARE LIBRARY & SDK

UNIVERSAL SCANNER FOR BUILT-IN USE

Combo Smart Kiosk is a full-page ePassport/ID reader for kiosks and automated border control gates. The reader module appears in an incredibly compact – 10 cm / 4 inches tall – brick design with mounting points, recessed connections and status LEDs. This physical form of Combo Smart Kiosk has been optimized for e-gates, CUSS projects and ATM user verification. The device has a full-size, ID-3 type document reading glass platen and replaceable document guide bracket, which is fully 180 degrees reversible during installation, allowing more convenient use and better access to the glass platen. Similar to Combo Smart, the reader is able to perform a broad spectrum authentication and data reading tasks. It can be used intuitively – requiring no training for the operating personnel.

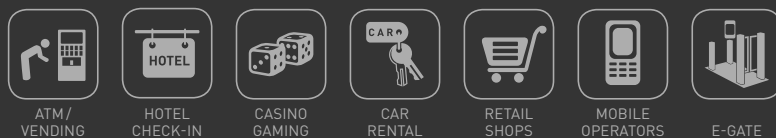
MAIN BENEFITS

- Incredibly compact design for built-in use
- Accurate reading and verifying of ICAO and non-ICAO compliant identity documents
- Barcode recognition from printed documents and smartphones
- Environment-independent operation
- Single step OCR and RFID reading for higher security and better speed
- Eliminates counterfeit ID acceptance

KEY FEATURES

- Adaptive Light Control feature to eliminate ambient light interference
- Proprietary glare-free imaging function for efficient OCR and barcode reading
- High resolution 500 PPI imaging with brilliant image quality
- Visible white, IR, UV illumination, and OVD visualization
- Full-page document scanning, dual antenna RFID function

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



COMBO SMART N

STANDALONE PASSPORT SCANNER WITH NETWORK CONNECTIVITY AND WEB INTERFACE

ALL-IN-ONE DOCUMENT READER AND VERIFICATION TERMINAL

Combo Smart N (N is short for Network), is an all-in-one ID verification terminal with an onboard processing system producing ready-to-use data. Unlike other ID readers that need a local PC connection, it performs every task on its own. This standalone device reads all ID information without a PC or laptop and works perfectly with thin clients. In fact, it is compatible with any kind of environment, making it platform independent. Like an IP security camera, it can be accessed via smartphones, tablets – displaying real time results. Similar to Combo Smart, the reader is able to perform full spectrum authentication and data reading tasks.



MAIN BENEFITS

- ID data presented in an easily accessible format
- Environment-independent solution for any ID reading purpose
- Thin client support
 - Immediate data transfer to selected location
 - Solution for high-security IT systems – no installation required
 - Supports duplex scanning

KEY FEATURES

- Onboard document processing
- Wi-Fi and Ethernet communication
- Configurable interface, accessible via a web browser
- HTTP / HTTPS, FTPS and SMTP communication protocols
- Websocket: push and pull mode



We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



BORDER
CONTROL



QUALITY
ASSURANCE



LAW
ENFORCEMENT



BANKING



HOTEL
CHECK-IN



MOBILE
OPERATORS

PRMc

FULL-PAGE E-PASSPORT SCANNER WITH OCR SOFTWARE LIBRARY & SDK

HIGH-END PASSPORT READER FOR MISSION-CRITICAL APPLICATIONS

PRMc is a full-page, multi-purpose scanner capable of authenticating various types of identity documents: passports, ID cards, visas and driving licenses – particularly in border control and high security applications. The printed data is extracted from the entire page (MRZ, VIZ and 1D & 2D bar codes) while digital data is obtained from contactless (RFID) chips. OCR and RFID reading is performed in a single step. The scanner utilizes multiple illumination sources (visible white, IR and UV), hardware-assisted reflection removal (RR), OVD visualization and ARH's sophisticated Adaptive Light Control function. In order to counteract the most often forged part of passports, PRMc is capable of capturing a 960 PPI image of the bearer's face photo from the data page. This results in an exceptionally high-resolution image, offering in-depth verification and allowing automatic Jura IPI decryption as well. PRMc is ideal for any application from border control and immigration to security and commercial environments, such as banks, hotels and telecom retailers. The scanner's robust design and its scratch resistant tempered glass reading surface assure flawless functioning in any mission critical operation.

MAIN BENEFITS

- Ideal for high security and border control applications
- Complete passport processing (ICAO MRZ, non-ICAO VIZ fields, single-step RFID reading and IPI decoding)
- Suitable for both kiosk and desktop use
- Maintenance-free operation due to no moving parts and durable scratch-resistant glass

KEY FEATURES

- Full-page document scanning with dual-antenna RFID system
- High resolution 475 PPI imaging with brilliant image quality in visible white, IR, UV illumination
- Additional 960 PPI resolution passport photo capturing
- Superb image processing: hardware-assisted reflection removal (RR), OVD visualization and Adaptive Light Control to eliminate ambient light

We stand behind our products' quality with confidence. We are proud to offer you a uniquely long, 3-year manufacturer's warranty for this product.



BORDER
CONTROL



QUALITY
ASSURANCE



SELF-
SERVICE



BANKING



HOTEL
CHECK-IN



E-GATE



FORENSIC
DOCUMENT
VERIFICATION



IDENTITY DOCUMENT READING AND VERIFICATION SOFTWARE

SOFTWARE LIBRARY & SDK

ARH offers reliable and high-speed data reading and verification software for all identity document types worldwide. These software modules are available for ARH ID and passport scanning devices.

VERSIONS & FEATURES



• PASSPORT READER SOFTWARE

This software and SDK comes with each ARH passport reader unit. The software contains 3 sets of tools. Firstly, image processing functions – cropping, face photo cutout, rotation, reflection removal, and Adaptive Light Control. Secondly, data reading tools – standard MRZ as well as 1D and 2D bar codes, and extended RFID reading functionality. Thirdly, it also contains authentication of standardized safety features like MRZ consistency check, B900 ink check, UV dullness check and various printed/digital crosscheck functions.



• CAPTURE SOFTWARE

This software is capable of reading non-standardized text, supporting Latin characters and alphabets using Latin characters with diacritical marks, for example the Slovakian and Romanian alphabet. As a custom development, it may even be capable of supporting unique characters like those of the Cyrillic alphabet.



• VERIFY SOFTWARE

In addition to VIZ OCR, this software is capable of checking standard as well as nonstandard security features like pattern checking illuminated by various light sources, geometry analysis and OVI checks according to the characteristics of the given document type.

• SUPPORTED DOCUMENT TYPES:

- Internationally accepted travel documents (different types of passports, visas)
- Local identification documents like ID cards, driver licenses
- Local residence permits, address cards, health insurance cards, etc.

MAIN BENEFITS

- Fast – the data reading and verification checks are performed within a few seconds compared to manually entering the ID data, which takes several minutes to complete
- Accurate – no mistakes compared to error-prone manual entries
- Reliable – high-reliability verification checks allow this solution to be deployed at heavy demand border crossings
- Worldwide – internationally accepted travel documents and local IDs are both supported
- Up-to-date – new document types are added regularly



BORDER
CONTROL



QUALITY
ASSURANCE



VENDING



BANKING



HOTEL
CHECK-IN



E-GATE



CASINO
GAMING



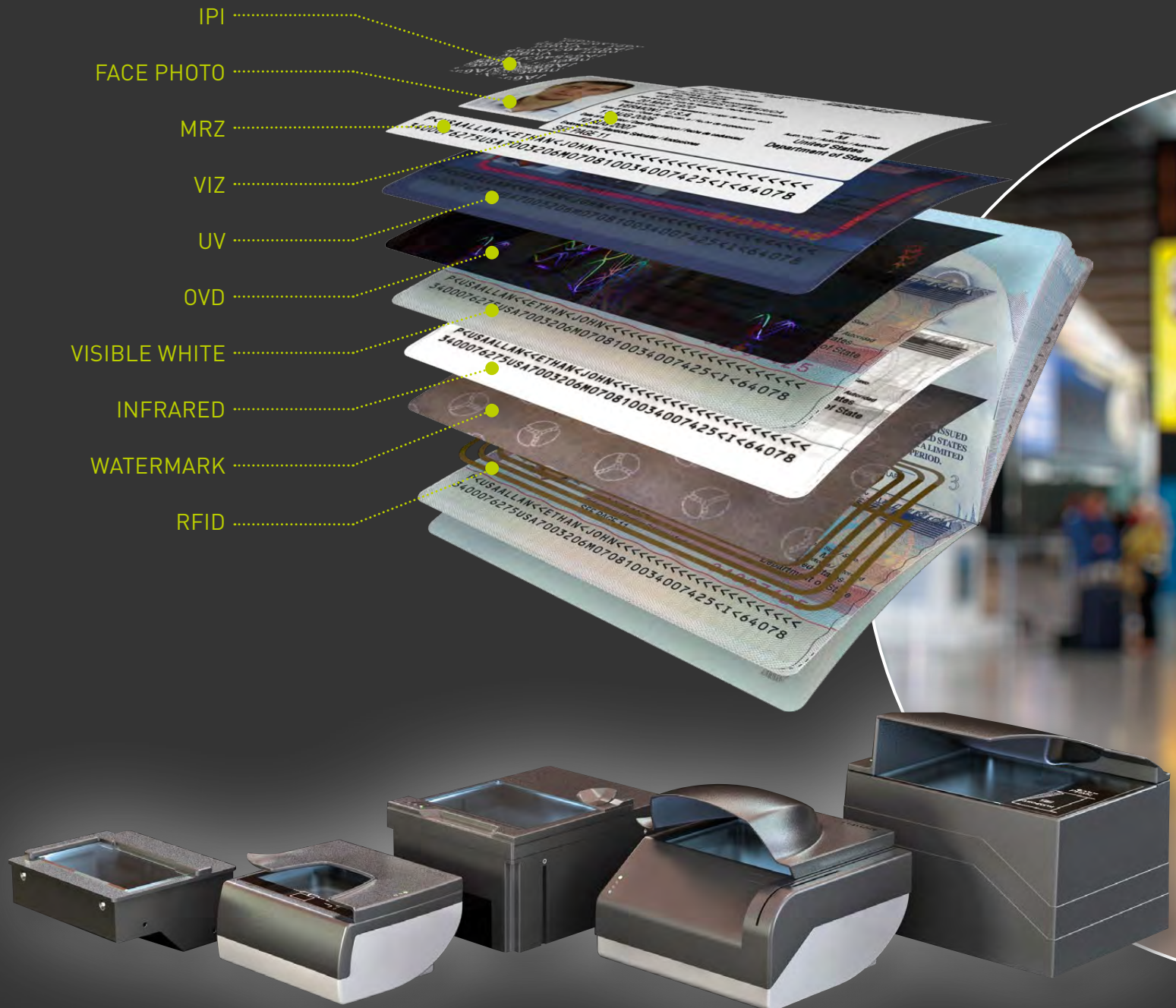
CAR
RENTAL



RETAIL
SHOPS



MOBILE
OPERATORS



COMPARISON CHART

		COMBO SCAN		COMBO SCAN KIOSK	COMBO SMART	
		COMBO SCAN	COMBO SCAN R	COMBO SCAN KIOSK	COMBO SMART L	COMBO SMART RL
Imaging	Active scan area	125 mm × 55 mm (4.92" × 2.17")			125 mm × 88 mm (4.92" × 3.46")	
	Resolution	500 dpi			500 dpi	
Illumination sources	Visible white	YES			YES	
	Infrared	YES			YES	
	UV	-			YES	
	Automatic Document Detection (ADD)	YES			YES	
	Reflection Removal (RR)	YES			YES	
	Adaptive Light Control	YES			YES	
	OVD visualization	YES			YES	
READING CAPABILITY		COMBO SCAN	COMBO SCAN R	COMBO SCAN KIOSK	COMBO SMART L	COMBO SMART RL
Printed data	MRZ according to ICAO9303	YES			YES	
	VIZ Reading	YES			YES	
	Barcode	YES			YES	
Electronic data	RFID (reading & writing) ISO 14443	-	YES	-	-	YES
	Contact chip according to ISO7816	-	-	-	-	-
AUTHENTICATION		COMBO SCAN	COMBO SCAN R	COMBO SCAN KIOSK	COMBO SMART L	COMBO SMART RL
Standardized checks		MRZ consistency check, B900 ink check, UV dullness check, MRZ-RFID DG1 data crosscheck, printed photo vs. RFID photo crosscheck				
Document-specific checks		available with optional VERIFY software module				
JURA IPI & LetterScreen		-				
RFID authentications (where applicable)		ICAO Doc. 9303 LDS 1.7, ISO 18013 (Drivers License) PKI 1.1, BAC, EAC, EAC2.0, PACE, PACE-CAM, AA, PA, TA, CA, BAP, EAP				
COMMUNICATION		USB				
PROGRAMMING & INTERFACES		COMBO SCAN	COMBO SCAN R	COMBO SCAN KIOSK	COMBO SMART L	COMBO SMART RL
Supported operating systems		Windows, Linux				
Software Development Kit (SDK)		included for all models				
Programming languages		C/C++, C#, Visual Basic 6.0, Delphi, VB.NET, Java				
Output formats	OCR data & authentication results	xml, csv				
	Scanned images	BMP, JPG, JPG2000 and PNG				
MECHANICAL & OTHER DATA		COMBO SCAN	COMBO SCAN R	COMBO SCAN KIOSK	COMBO SMART L	COMBO SMART RL
Size (width × depth × height)		152 mm × 130 mm × 82 mm (5.98" × 5.12" × 3.23")			178 mm × 176 mm × 146 mm (7.01" × 6.93" × 5.75")	
Power supply		USB			Universal external power supply (100-240 V AC, 50/60 Hz)	
Production Code		COMBOSCAN-01-2100	COMBOSCAN-01-2280	COMBOSCAN-01-2100	COMBOSMART-01-2308	COMBOSMART-01-2388
Warranty		3 years			3 years	

IDENTITY DOCUMENT READERS & BIOMETRICS

COMBO SMART		COMBO SMART N	COMBO SMART Kiosk		PRM _c
COMBO SMART LS	COMBO SMART RLS	COMBO SMART N RLSW	COMBO SMART KIOSK L	COMBO SMART KIOSK RL	PRM _c
125 mm × 88 mm (4.92" × 3.46")			130 mm × 90 mm (5.12" × 3.55")		130 mm × 98 mm (5.12" × 3.86")
	500 dpi			500 dpi	475 dpi / 960 dpi (for photo area)
	YES			YES	YES
	YES			YES	YES
	YES			YES	YES
	YES			YES	YES
	YES			YES	YES
	YES			YES	YES
	YES			YES	YES
COMBO SMART LS	COMBO SMART RLS	COMBO SMART N RLSW	COMBO SMART KIOSK L	COMBO SMART KIOSK RL	PRM _c
	YES			YES	YES
	YES			YES	YES
	YES			YES	YES
–		YES	–	YES	YES
	YES		–	–	–
COMBO SMART LS	COMBO SMART RLS	COMBO SMART N RLSW	COMBO SMART KIOSK L	COMBO SMART KIOSK RL	PRM _c
MRZ consistency check, B900 ink check, UV dullness check, MRZ-RFID DG1 data crosscheck, printed photo vs. RFID photo crosscheck					
available with optional VERIFY software module					
–					YES
ICAO Doc. 9303 LDS 1.7, ISO 18013 (Drivers License) PKI 1.1, BAC, EAC, EAC2.0, PACE, PACE-CAM, AA, PA, TA, CA, BAP, EAP					
USB		Ethernet + wifi		USB	USB
COMBO SMART LS	COMBO SMART RLS	COMBO SMART N RLSW	COMBO SMART KIOSK L	COMBO SMART KIOSK RL	PRM _c
Windows, Linux					
included for all models					
C/C++, C#, Visual Basic 6.0, Delphi, VB.NET, Java					
xml, csv					
BMP, JPG, JPG2000 and PNG					
COMBO SMART LS	COMBO SMART RLS	COMBO SMART N RLSW	COMBO SMART KIOSK L	COMBO SMART KIOSK RL	PRM _c
178 mm × 176 mm × 146 mm (7.01" × 6.93" × 5.75")			150 mm × 195 mm × 117 mm (5.9" × 7.68" × 4.60")		213 mm × 173 mm × 179 mm (8.39" × 6.81" × 7.08")
Universal external power supply (100-240 V AC, 50/60 Hz)			Universal external power supply (12V DC)		Universal external power supply (100-240 V AC, 50/60 Hz)
COMBOSMART-01-2348	COMBOSMART-01-23C8	COMBOSMARTN-01-25C8	COMBOSMARTK-01-2208	COMBOSMARTK-01-2288	PRMC-02-248E
3 years			3 years		3 years

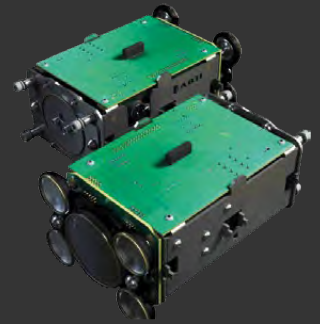
CUSTOM MADE PRODUCTS

Still haven't found what you were looking for? We are keen to listen to the specific needs of our customers and ready to utilize our vast engineering expertise to create a customized product for you. By having all the essential know-how, hands-on-experience and our own manufacturing and fast prototyping facility, we can deliver custom-made products based on your requirements in a short time, meeting strict quality control standards.

PRODUCT DEFINED BY CLIENT

Not many independent developer-manufacturer companies remain active in this industry for 26 years – savvy, experienced, with their own production line – in short, having all the key ingredients for the development of highly specific products. ARH is one of the few such corporations.

OEM products have always been a prominent field for ARH and they will remain a high priority and source of self-esteem. So far, ARH has performed over 500 OEM assignments. Some of our off-the-shelf products were originally developed as OEM projects.

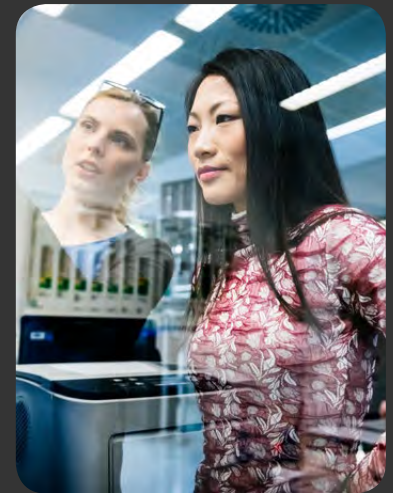


KEYWORD: FLEXIBILITY

All OEM challenges are welcome, whether it is re-branding, changing the color scheme, the complete redesign of a product from scratch or serial production.

1. ARH's own SW and HW engineering teams have vast experience in creating prototypes.
2. The easy and cost-effective way to impact your potential client is impressive design. ARH's own product design team will find the perfect form – innovative, functional and eye-catching combination.
3. Within tight deadlines, ARH can produce 3D-printed housing or even working prototypes.
4. Products are regularly tested in ARH's own labs (EMC, radio and other).
5. Approved prototypes are soon turned into serial production models.

Tell us your problem and we'll help you find a solution.



CUSTOMIZED SOLUTIONS

SOME EXAMPLES OF OUR LATEST CUSTOM MADE PROJECTS

1. ARH 25MP DUAL LENS ANPR SMART CAMERA

ARH 25 MP Ultra High Resolution Traffic Camera deploys its unmatched optical sensitivity to produce exceptional ANPR results and identify/recognize other optical marks, e.g. the visual characteristics – even punch holes – of toll stickers. The camera is sensitive to the smallest optical details, thanks to the exceptionally high 1.4 pixel = 1 millimeter resolution. The camera's built-in laser beam has 2 roles: the high precision detection of passing vehicles (triggering) and vehicle categorization – based on physical dimensions. The captured images are processed by the industry's best, state-of-the-art CARMEN® ANPR engine. The moving-part-free design ensures solid, reliable functioning in harsh environments like operating while mounted on a continuously vibrating gantry. Besides high detail images and ANPR, the camera is also great for tasks including finding blacklisted or stolen vehicles.



2. E-PASSPORT READER WITH AN EXTRA LARGE SCANNING WINDOW

ARH's client wanted a stylish fully featured e-passport reader to scan landing cards, which are twice as large as a passport data page. Besides designing the appropriate lighting, the real challenge was to integrate and fine-tune the oversize RFID antenna. The relevant ISO and ICAO specifications had ID-1 antenna size (54 × 86 mm) and in the new product chips had to communicate with an antenna 4.5 times larger than that. ARH's professional design team worked hard to achieve what at first sight had seemed mission impossible. In the end, the reader got an extra ID face photo recognition camera, built-in reflection removal technology and a sleek design. The project turned out to be a success story in its 5th generation today, with more than 3000 units delivered.



ABOUT ARH

100,000+ LPR SYSTEMS

License Plate Recognition (LPR) – also known as Automatic Number Plate Recognition (ANPR) – is ARH's flagship technology. The 2 key components of LPR systems are the **LPR software**, purpose-made to read vehicle license plates, and dedicated **LPR cameras**.

ARH's flagship software product is the Carmen® ANPR engine trained in-house to reliably read all license plates in the world. Carmen's cutting edge is its alphabet-independent operation of unrivalled speed and accuracy. Carmen® ANPR reads license plates from many image sources: still images as well as live or recorded video streams. It offers country-independent and alphabet-independent recognition of not only Latin characters, but also Arabic, Cyrillic, Chinese, Korean, Thai and many more alphabets.

We at ARH develop, manufacture and offer a broad range of purpose-built LPR cameras. For LPR-optimized imaging, purpose-built cameras yield far better results than general-purpose cameras. This is why ARH developed a line of dedicated plate recognition cameras – for fixed, portable and mobile use – designed with the entire process of LPR in

mind: triggering, image capturing, image preselection and, optionally, onboard plate recognition.

License Plate Recognition is used excessively all over the world for plate-based toll collection, automated border control, traffic monitoring, traffic security monitoring, traffic and speed enforcement, parking management, vehicle access control and many other application areas.

With hardware and software development in one hand, in-depth industrial expertise accumulated in the course of 28 years of in-house product development, we have:

- The potential to develop electronic, mechanical and optical systems and software;
- Our own manufacturing base to produce electronic and mechanical equipment as well as complete systems;
- Service potential – from installation through operation.

In other words, ARH can offer unrivalled benefits in **License Plate Recognition**.

60,000+ ID READER SYSTEMS

We design and deliver purpose-made **ID scanners** and **passport readers** that can read ALL identity documents in the world. ARH passport readers extract both printed and electronic data from official travel documents and national IDs including ID cards and driver's licenses. A technologically more challenging task is detecting fake, forged or tampered ID documents – a process called verification or authentication. ARH's passport readers perform identity document authentication within seconds by checking a range of document-specific security features in various wavelengths of light. Authentication includes analyzing data integrity, too: cross-checking the captured printed and electronic information in compliance with the latest and most advanced e-passport standards.

ID document reading is widely used all over the world for 24/7 Automated Border Control (ABC), e-gates, airline check-in systems, know-your-

customer schemes in banking, hotel guest registration, physical access control systems and age verification in bars, casinos and the gaming industry.

With hardware and software development in one hand, field-tested innovative technology, in-depth industrial expertise accumulated in the course of 28 years of product development, we have:

- A team of over 200 engineers;
- Our own manufacturing base to produce electronic and mechanical equipment;
- The potential to develop electronic, mechanical and optical systems and dedicated OCR software.

In other words, ARH can offer unrivalled benefits in **ID reader systems**.

12,000+ SATISFIED PARTNERS

Many of ARH's clients are system integrators creating **LPR systems** and **ID reader systems** – both of which are based on Optical Character Recognition (OCR). Read about these technologies here.

Beside OCR-based technologies, we have multiple other product lines. A key area in every Smart City concept is efficient traffic management. **Intelligent Transportation Systems (ITS)** can have a great positive impact on urban growth, safety and environment. ARH's non-intrusive intelligent traffic monitoring devices with on-board video analytics deliver real-time, accurate information with the aim to streamline traffic and maximize urban infrastructure potentials.

Video analytics plays a great role in **traffic enforcement** by automatically recognizing traffic offences and assisting the work of traffic authorities with photo and video evidence records.

Smart CCTV detecting user-defined events is used for monitoring urban areas, sport stadiums, shopping malls, fleets of public transportation as well as logistics and manufacturing sites – not only as a means of proactive security management, but also as a new and untapped

marketing tool. Intelligent video surveillance will never completely replace human workforce – but it can always ideally support personnel in their daily work with smart technology.

As a privately-owned company with headquarters in Budapest, Hungary, ARH has direct market presence in 140 countries and a network of 50 country-level sales representatives. We have:

- Multiple market-leading ARH products
- A team of over 200 engineers
- Product development potential – turning ideas into prototypes and serial production

Beside **LPR systems** and **ID reading systems**, our technology is used in ITS, plate-based vehicle access control, traffic enforcement based on video analytics and intelligent Video Management System or Smart CCTV systems.

In other words, ARH can offer unrivalled benefits – as proven by over **12,000 satisfied partners** worldwide.

CONTACT ARH



ARH INC. - HUNGARY, EU

ALKOTAS UTCA 41
BUDAPEST, 1123 HUNGARY
PHONE: +36 1 201 9650

☆ WWW.ARH.HU
✉ FLYER@ARH.HU



INNOVATION CENTER, EU

PERBAL, 2074 HUNGARY

☆ WWW.ARH.HU
✉ FLYER@ARH.HU



ARA CORP. - FLORIDA, US

28059 US HIGHWAY 19 NORTH
SUITE 203, CLEARWATER
FLORIDA 33761
PHONE: 727-724-4219

☆ WWW.ADAPTIVERECOGNITION.COM
✉ FLYER@ARH.HU



ADAPTIVE RECOGNITION S.R.O. - BRNO, CZ

HOLANDSKÁ 878/2, 639 00
BRNO - ŠTÝŘICE, CZECH REPUBLIC
PHONE: +42 0 537 022 131

☆ WWW.ADAPTIVERECOGNITION.CZ
✉ FLYER@ARH.HU



ADAPTIVE RECOGNITION PTE LTD. - SG

1 LORONG 2 TOA PAYOH#05-05
YELLOW PAGES BUILDING
SINGAPORE 319637
PHONE: +65 9681 1808

☆ WWW.ADAPTIVERECOGNITION.SG
✉ FLYER@ARH.HU



ARH NORDIC APS DK - NO - SE

WINGHOUSE - ØRESTADS BOULEVARD 73
DK- 2300 COPENHAGEN, DENMARK
PHONE: +45 31 100 300

☆ WWW.ARHNORDIC.COM
✉ FLYER@ARH.HU

CERTIFICATIONS

We are committed to delivering quality products and services that exceed customer requirements and expectations at all times, in an environment that supports and promotes continuous improvement.

Three ISO certificates recognize that ARH's operation conforms to the highest international standards.



ISO 9001:2015

Quality management – manufacturing, sales, marketing and customer support.



ISO 14001:2015

Environmental management – ARH is committed to be a green company.



ISO 27001:2013

Information security management – protection of confidentiality, integrity and availability of sensitive data at ARH.

SOCIAL MEDIA



[linkedin.com/company/adaptive-recognition](https://www.linkedin.com/company/adaptive-recognition)



[youtube.com/arhungary](https://www.youtube.com/arhungary)



twitter.com/aracorpora



MICROSITES

<https://carmen.hu/>



<https://carmen-go.com/>



<http://prmc.eu/>



Specifications are subject to change without prior notice. Copyright © 2019/Q1 ARH Inc.

All rights reserved. No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), without the express written permission of ARH Inc. CARMEN®, ParkIT®, FreewayCAM®, SmartCAM®, SpeedCAM®, Combo Scan®, Combo Smart® and PRMc® are trademarks or registered trademarks of ARH Inc.

All data is for information purposes only and not guaranteed for legal purposes. Information has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. ARH and the ARH logo are registered trademarks of ARH Inc. All other brand product names are trademarks or registered trademarks or copyrights by their respective owners and are recognized.

DIGITAL VERSION:





2019/Q1